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PRINCIPAL CONTENTS.

Iron Ores and Iron Manufacture—New York..495
Copper Ores of Lake Superior.....498
Railroad Mismanagement.....498
Zincing of Iron.....499
Artistic Design in Metal Works.....499
Coal Trade for 1849.....500
English Patents.....501
Iron Trade.....501
Internal Improvement Debt of Illinois.....501
Baltimore and Ohio Railroad.....501
Orange and Alexandria Railroad.....501
Boston and Providence Railroad.....501
Railway Reports and Railway Management...502
Greenville and Columbia Railroad.....502
York and Cumberland Railroad.....503
Boston and Worcester Railroad.....503
Railroads in South Carolina.....504
Rutland Railroad.....504
Ohio and Pennsylvania Railroad.....504
Ogdensburgh Railroad.....505
Depreciation of Railroads.....505
Gold and Gold Mines.....506

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Iron Ores and the Iron Manufacture of the United States.

Continued from page 481.

NEW YORK

The iron ores of this state are found in districts far remote from each other, and of different characters in different geological formations. At the east, in the counties of *Columbia and Dutchess*, is the *hematite ore region*, which is but a continuation of that just described in Connecticut and Massachusetts. Though rich in iron ores on the east side the Hudson, these seem mostly to fail on its range west of the river through Rockland and Orange counties and New Jersey, where the gneiss rocks, that bound the hematite formation on its south side are remarkably productive in *magnetic iron ores.*—Veins of these ores commence in *Putnam county* near the Connecticut line, and are traced through the highlands across the Hudson. In Orange county three furnaces and several forges are built to use these ores, and several others in the three counties of Putnam, Rockland and Orange have long since been abandoned.

In the northern part of the state along the western shore of *Lake Champlain*, extending to the western limits of *Essex county*, and probably connecting directly with the mines of the St. Lawrence district, is a region still more productive in *magnetic iron ores* than that of the southern portion of the state. These support eight blast furnaces and more than 150 forge fires, which last consume over 50,000 tons of ore per annum.

West of this, and in the same great primary tract, are the mines of *St. Lawrence and Jefferson counties*, whose outlet is the St. Lawrence river. The ores furnished by these are mostly *specular ores*, on which are dependent five blast furnaces.

In the secondary strata south of this tract, along the shores of *Oneida Lake*, and extending to those of *Lake Ontario* is a group of red and variegated slate, occupying a narrow strip of the surface extending nearly from the Hudson to the Niagara river.—Their geological position is beneath the Niagara limestone, which is itself below the old red sandstone. They carry with them a band of *red fossiliferous ore*, small in thickness, but supplying a large amount of valuable ore, where the formation lies spread out in nearly horizontal layers convenient to the surface of the country. This ore, well known in Pennsylvania as the "*Calawissa ore*," is of easy reduction, containing some calcareous matter, and makes a good foundry iron. In *Oswego county* there is one furnace using these ores, in *Oneida* one, and in *Wayne county* three more.

SOUTHERN DISTRICT.

Columbia and Dutchess Counties.—The iron ores of these counties lie near the Massachusetts and Connecticut line, and are included in a portion of the same belt of strata in part described under the head of these states. The ores come into New York state at about the point where the Western Railroad crosses the line, and a few miles south of this, in the town of Hillsdale a valuable bed of ore has been wrought for more than twenty years. The ore is in large quantity and it costs to mine it about one dollar per ton. It has been carted to the Stockbridge and Vandeusenville Furnaces, and also to some of those in the northwest corner of Connecticut, where it has been found to work well mixed in inferior proportions with the best Stockbridge and Salisbury ores. It contains a considerable amount of sulphur, and alone would not do well. It must, however, have good qualities to have made it an object to transport it for years to the Stockbridge Furnace, a distance of twelve miles.

Prof. Mather describes the ore beds here as follows:—

"Prescott's ore bed is one and a half miles north of the Columbia turnpike in Hillsdale. It is bounded on the west by limestone like those of Amenia, Indian Pond, Fishkill* &c. This locality was discovered many years ago, and forty tons of ore picked out of the brook and reduced in a forge. It was not much worked until 1822, when Mr. C. Prescott began the manufacture of yellow ochre at this place. The ore is hematite, in detached nodules, alternating with ochre and fragments of decomposed slate rock. The hematite increases, and the ochre diminishes in quantity as you descend. The ore has been penetrated, according to Mr. Prescott's statement, 32 feet without finding bottom. This ore yields 32 per cent. of bar iron when worked in the forge, and at least 50 per cent of pig iron when smelted in the high furnace.

Another ore bed is located three quarters of a mile south of the above, also on the east side of the limestone, which was opened by Mr. Prescott in 1822, and which he has since sold to a furnace company in Salisbury, Connecticut.

Mr. Prescott has made from his ore bed 275 tons of yellow ochre, which has been sent to market and sold."

Copake Furnace.—This furnace in the town of Copake, near the southeast corner of Columbia co., was built in the year 1845 by Messrs. Pomeroy of Pittsfield, Massachusetts. It has the advantage of an excellent bed of hematite ore directly by the fur-

* Prof. Mather either describes a different mine from that now worked for the Hopewell Furnace in Fishkill, or one of us is in error as to the position of the limestone. I describe it as on the *east* side of the ore (p. .)

We appear not to be the only observers, between whom there is some discrepancy of opinion in relation to this mine. Dr. Lewis C. Beck in the annual report for 1837, remarks of it—

"Independently of the interest, which this locality possesses in a mineralogical point of view, the judicious manner in which the mining operations are conducted, renders it worthy of particular notice."

Prof. Mather the next year of his report state that, "Most of the galleries have caved in in consequence of the injudicious method of working the ore."

nace; but this being established on a stream of insufficient power, it has not been very successful, and it has finally been found expedient to add a small steam engine to insure at all times the required blast. The furnace is about thirty feet high, and was built for making only cold blast iron. The ore costs about $1 25 per ton, charcoal seven dollars per hundred bushels. The production of pig iron is from three to four tons per day, with consumption of about 200 bushels of charcoal to the ton. The ore bed here too, according to Prof. Mather is bounded on the west by limestone, and mica slate is not far to the east.

Northeast, Dutchess Co.—The furnace here was built in 1847 by Wells, Robertson & Co. It is distant from the Housatonic railroad seven miles, the cost of transportion being one dollar per ton. The Salisbury ore bed lies one mile only to the southeast, but the furnace is supplied from an excellent bed opened on the furnace bank, which has been before alluded to as possibly a continuation of the Salisbury bed. The ore resembles the best of the Salisbury ore, being a very pure and easily washed hematite of open spongy texture and light reddish color.

The furnace is 33 feet high, eight feet across the boshes, and two feet tunnel head. It is driven by a steam engine of about twenty horses power, and is supplied with a complete set of hot air pipes and an efficient blowing apparatus. The ore costs $1 50 per ton delivered; charcoal about 7 50 per hundred bushels. The yield of the furnace is from 5 to 6 tons daily

Amenia Furnace—owned by N. Gridley & Co.; built about 20 years since. It is situated near the Amenia ore bed, on a small stream seven miles from the Housatonic railroad. The ore costs $1 50 per ton delivered: charcoal from $6 50 to $7. The furnace is blown with hot blast, is well managed, and has been very successful. Much of the iron made is of a superior quality of foundry iron, for which an extra price is paid to be made into heavy castings.

The Amenia ore bed is thus described by Prof. Mather in the State Geological Report, for the year 1838:—

"The Amenia ore bed yields 5000 tons of ore per annum, which gives on an average 50 per cent. of pig iron. The mine is worked to this day like an open quarry. A layer of earth and gravel and broken rocks covers the ore from five to twenty feet in thickness. This is first removed and the ore then excavated. They have not yet found the bottom of the ore in any place although in one pit they have excavated into it 45 feet. It improves in quality the farther they descend. No estimate can be formed of the amount of ore in this bed, which probably unites with the others north and south of it. Estimating its breadth at 100 yards, and its length at 1000 yards, with 15 yards depth, through which it is open, it is capable of yielding 1,500,000 tons of ore, and at the present rate of workings will last 300 years.

Talcose slate crops out a few rods east, and white limestone a few rods west of the ore bed. Mines which have been and still are extensively wrought, have been opened over a distance of more than half a mile in length; the extent of the bed in these directions is not yet known. Another mine, possibly a continuation of the same bed has been opened at Squabble Hole, about 2 miles SSW. from Ameniaville. The ore at this place lies under a deposit of pebbles, gravel and loam about 15 to 20 feet deep.—It is supposed to be abundant. Many tons have been taken out during the past season."

Prof. Mather speaks of another mine called the Chalk Pond ore bed, two and a half miles northeast of Ameniaville.

Dr. Lewis C. Beck also describes this ore in the annual report for the year 1837—

"The bed has been opened at various places for the distance of 100 yards, and the ore presents all the varieties observed at the celebrated Salisbury deposit. It often occurs in the form of stalactites of various sizes, and possessing uncommon beauty.—The same high polish, or blackish sooty matter is observed on the surface of the nodules, and they not unfrequently have a light brown color, and a structure so distinctly fibrous as to bear a considerable resemblance to wood. A fragment of a stalactite from this locality was found to have a specific gravity of 3·828, and to lose upon calcination 135 per cent of its weight. The composition of this speciment will probably be a fair average of that of the pure hematite variety from the various localities this country.

Analysis of Brown Hematite from the Amenia ore-bed:—

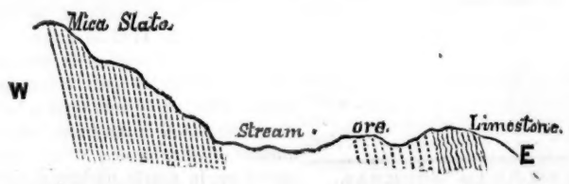
Peroxide of iron	82·90
Silica and alumina	3·60
Water	13 50
Oxide of Manganese	trace
	100·00

Dover Furnace—was built about twelve years since. It is situated eight miles from the Housatonic railroad. The ore is brought in part from the Amenia ore bed at a cost of three dollars per ton, and a portion from the Foss bed, a mile and a half to the WSW., at a cost of about $2 50. The ore at this place is associated with mica slate, and is found in large quantities of good lump ore. The Clove ore bed has also furnished a considerable amount of ore to this company. It cost in 1838 for mining $0 75; duty $0 94. The ore is of pure quality; the bed bounded on the east by limestone. Coal costs about $7 per hundred bushels. The furnace is blown by water power and with hot blast: its size is about 35 feet in length.

White's Furnace in Dover—Built in 1846. It is eight miles from the Housatonic railroad on a small stream of water. Ore is obtained from the Quaker Hill and Foss ore beds at a cost of about $2 50 per ton; coal costs $7.

The three furnaces last described will soon be much benefitted by the extension of the Harlem railroad to Dover Plains. The cost of transportation of iron to market by teams to the Housatonic railroad and by this road and the Bridgeport boats to New York has, at the rates charged by the Housatonic railroad company, been a serious expense, from which they will now be in great part relieved. The ore bed too in the vicinity will share in this increase of value; and should the supply of charcoal warrant, it is reasonable to expect that several new furnaces may be started in this neighborhood. The Harlem railroad has found it for its interest to charge the lowest rates of freight and passage, and its extension to Dover Plains must soon open to the notice of capitalists a district now little known, but remarkably formed in its soil, climate and mineral resources.

Beekman Furnace—about two miles north of Beekman Village, and fourteen from Poughkeepsie, is owned by Sterling and others of Poughkeepsie. It uses the hot blast and makes about five and a half tons of iron a day. It is on a stream which affords excellent water power and a fall of some twenty feet. The ore bed is two miles and a half north of the furnace, the road following up a stream and along the base of a high ridge of mica slate, which rises to the west. The ore has been opened along a length of eighty or a hundred rods in a north and south course.



A broken irregular excavation down to the water level, which at the most is forty feet from the top of the bank. It cannot well be drained deeper than this, and a steam engine will be required to work deeper. From the fact of the ore above the water being mostly removed, an impression prevails that the bed is failing. To the east it is worked through to the limestone, and some persons I met with employed at the mine did not seem to be aware that it continued below. At other places in the vicinity the indications of ore are very good.—The quality is excellent, a rich chocolate brown hematite. It lies under eight or ten feet of clay and occurs in massive strata mixed with ochres. Places for working are very convenient in the stream close by. Contracts for raising the ore are at $1 per ton and sometimes $1 25, according to the quantity of earth to be removed over it. Fifty cents is paid for transportation to the furnace. Charcoal costs about 8 dollars. This furnace has been successful, making excellent iron at a good profit.

Hopewell Furnace at Fishkill, built about 16 years since, owned by Judge Emmet of Poughkeepsie, and leased to Mr. William Bushnell of that place, at $1500 per annum. It is nine feet in diameter across the boshes, and forty feet high, uses hot blast, and makes from five to six tons per day. At the time I visited it in the fall of 1847, it was making from five to five and a half tons of No. 2 iron of excellent quality. It is situated on Fishkill creek, about fourteen miles from Fishkill, landing on the Hudson, and six miles south from Beekman Furnace. The water power appears good. Coal costs delivered, 7 50 to $8, being hauled about twelve miles. The ore bed is owned by Mr. Bushnell.—It is two miles and a half north from the furnace, and fourteen miles from Poughkeepsie, where Mr. Bushnell has built a large furnace to be supplied from this bed. The ore is of the best quality of chocolate brown hematite, and of very uniform character. It lies in strata on the west side of a ridge of siliceous limestone, and dips with this rock at a steep angle to the east;—but the ore appears to curve over away from the limestone and dip to the west. The excavations cover two or three acres and are about fifty feet deep, of which ten to twenty

A Table of the Iron Furnaces in the State of New York.

In the following Table are comprised all the furnaces in the State, arranged according to the districts just described; excepting the Poughkeepsie furnace, and that of P. Townsend, Jr., all are built to use charcoal.

	No.	Names.	Proprietors.	Situation.	Capacity.	Ores.	Blast.	Date.
Southern District.	1	Copake,	Pomeroy of Pittsfield,	Columbia county.	1200	Hematites,	cold,	1845
	1	Northeast,	Wells, Alger and others, Mass.	Dutchess county,	1800	" "	cold or hot,	1847
	1	Amenia,	N. Gridley, & Co.	" "	1800	" "	hot,	
	1	Dover,	.....	" "	1600	" "	hot,	
	1	White's,	—— White,	Dover county,	....	" "	hot,	
	1	Beekman,	Sterling and others,	Dutchess county,	1600	" "	hot,	
	1	Fishkill,	Judge Emmett,	" "	1600	" "	hot,	
	1	Poughkeepsie,	Wm. Bushnell,	Hudson River do.,	2500	Hem. & Mag.	hot,	1847
	1	Greenwood,	Parrott and others,	near West Point, Orange county,	....	Magnetic,	hot,	
	1	P. Townsend's,	Peter Townsend,	Erie railroad, Orange county,	2500	" "	hot,	
	1	P. Townsend's, Jr.,	Peter Townsend, Jr.	near N. J. State line, Orange county,	2500	" "	hot,	1848
Lake Champlain District.	1	Duane,	.....	Franklin county,	600?	Magnetic,	.....	
	1	Sisco,	F. H. Jackson,	Westport, Essex county,	2500	" "	hot,	1846
	2	Port Henry,	Port Henry Iron Company,	Port Henry, "	5000	" "	hot,	
	1	Crown Point,	Hammond & Tower,	Crown Point, "	2500	" "	hot,	
	1	East Moria,	.....	E. Moriah, "	....	" "	hot,	
	1	Mt. Hope,	E. Woodruff & Son,	Washington county,	1500	" "	hot,	
	1	Adirondac,	McIntyre, Robertson and Henderson estate,	Essex county,	500	" "	hot,	
St. Lawrence District.	1	Rossie,	George Parish,	Rossie, St. Lawrence county,	3000	Specular,	hot,	rebuilt 1843
	1	.....	Benjamin F. Skinner & John S. Blish,	" " "	1800	" "	.....	
	1	Fullerville,	Messrs. Fuller,	Fowler, " "	600	" "	.....	
	1	Canton Falls,	H. Van Rensselaer,	Canton Falls, " "	400	" "	.....	
	1	Brasher,	Wm. H. Alexander, of Syracuse,	Brasher, " "	800	Bog Ores,	....	
	2	Waddington,	Messrs. Ogdens,	Waddington, " "	....	" "		out
	1	Norfolk,	.....	Norfolk, " "	....	" "		of
	1	Westfield,	.....	Westfield, " "	....	" "		blast.
	1	Antwerp,	James Sterling,	Jefferson county,	800?	Specular,	cold,	
	1	Sterlingville,	" "	" "	800?	" "	hot,	
	2	Carthage,	Leased by Budd & Bones,	" "	800?	" "	hot or cold	one out of blast.
	1	Scriba,	Swiss Company,	Scriba, Oswego county,	1500?	" "	.....	1847
* Ontario District.	1	Constantia,	Coffing & others,	Oswego county,	1700	Fossiliferous,	hot,	
	1	Taburg,	Armstrong,	Oneida county,	1700	" "	hot,	
	1	Clinton,	Bacon & Cheney,	Wayne county.	2000	" "	hot,	
	1	Ontario,	Titus & French, of Rochester,	Ontario, Wayne county,	1500	" "	hot,	rebuilt 1848
	1	Wolcott,	Livingston & Hendricks, of Albany,	Wayne county,	900	" "	hot,	
					.....			

* Mr. Vanuxem in the Geological Report speaks of a furnace at *Westmoreland*. And both he and Dr. Beck of another at *Lewisbury*. Of these I have no details.

at the surface are in clay, and below in ochres and ore. It is impossible to tell what the thickness of the ore strata may be; but the quantity appears to be enormous, and from the size of the excavations it is evident large quantities have been taken away. It is said to be found over about ten acres, and loose pieces in the road on the line of the bed indicate its continuance where it has not been opened. The cost of the ore delivered at the Hopeville Furnace is mining one dollar transportation fifty cents; washing ten cents. A large proportion is lump ore not requiring washing. The washing is done on the shore of Roger's Pond near the ore bed, where Mr. Bushnell has a steam engine of four horse power employed in raising water for this purpose. When the ore is well cleaned two tons make a ton of iron.

This furnace has been successfully and skilfully managed. The iron has sustained a good character in the market, and no one can examine the cinder heaps without seeing that the furnace has run well and failed to extract little of the metal that was in the ore.

Poughkeepsie Furnace.—The large furnace built in 1847 on the bank of the Hudson just below Poughkeepsie, though not itself in the hematite region, is supplied from the ore bed at Fishkill, 14 miles back from the river, and will be run with charcoal or anthracite according to the relative profits of one to the other. It was built by William Bushnell, Esq., who has displayed in the plan and execution of the work no little judgment and skill.

Copper Ores of Lake Superior.

Continued from page 482.

EAGLE HARBOR MINE.

The pleasant little bay, called Eagle Harbor, lies about nine miles east of the mouth of Eagle river.—Its entrance is narrow, and its width does not exceed a quarter of a mile; but it extends parallel with the coast about a mile, affording safe anchorage to vessels that can pass over the reef at the entrance.—The depth of water in this is somewhat over six feet. The outer shores of the harbor are ledges of trap rock; but within are smooth sand beaches, which slope rapidly down into deep water. From the safety of the harbor, when vessels are once in it, and its importance to some of the neighboring mines, it is probable its entrance will be deepened before many years, as it can well be done without great expense. It is the nearest harbor to the mines of Eagle river including the Cliff and North American Mines; and it may be at some time advisable to connect it with them by a plank road in order to make it their shipping port, instead of, as at present, sending their copper in scows to the vessels anchored in the open lake.

The outer shores of Eagle Harbor are skirted with bands of trap rock; these almost directly give place within to strata of conglomerate and sandstone which pass by their northerly dip beneath the trap and the lake. The trap is highly amygdaloidal, and contains copper together with the other minerals common to this rock near its contact with the sandstone. Fissures running at right angles to the bands of rock are of frequent occurrence. These are generally filled with the white calcareous and siliceous veinstones: and in a calm day they may be traced far out into the lake, being plainly discernable from the canoe, which floats on the transparent water high above them. One of the veins was found highly productive in native copper directly at the surface, the metal occurring in large ragged masses in the laumonite and quartz, of which the vein was principally composed; but as the height of the shore above the lake did not exceed fifteen feet, and the width of the trap belt was only 60 or 70 ft. there was little room for working the vein except in its course under the water. And a stop was soon put to this by the injudicious mode of laying out the work, the water of the lake being soon admitted into the open cut. The spot being directly upon the outer shore exposed to the heavy waves from the north, and to the ice of winter, it is doubtful whether further progress will ever be made in following this vein. From forty to fifty tons of copper were obtained and the work was then abandoned. The location of the company extends back upon the trap ridge; but little has been done upon it in the way of exportation.

North Western Mine.—This lies four miles back from Eagle Harbor on the southern slope of the trap ridge. It is singularly situated to the Albion, North American and Cliff Mines. The vein is found passing through the compact trap above, the stratum of conglomerate, which here occurs between the compact and amygdaloidal trap, and lastly through the amygdaloid at the base of the ridge. A greater width of the rock is exposed to view than the shape of the ground admits of at the other mines above named, a swamp at those almost immediately succeeding to the steep cliff above. Here a gentler slope affords room for mining operations on a larger line of vein; and several shafts sunk along it to moderate depth have exactly determined its course and position. From one of these masses of copper of many pounds weight have been obtained besides a considerable quantity of stamp work; though its depth is only about twenty feet.—The work seems to be abandoned for the present, notwithstanding its very encouraging appearance. The tract is conveniently situated as to communication with the harbor, the road passing through the ridge by one of the gaps, and being on an easy grade.

Northwest Mine.—This is situated six miles southeast from Eagle Harbor, with which it is connected by an easy road. Its geological position is precisely similar to that of the mine just described.—Three veins are known on the tract, which are near together, and the two outer ones nearly parallel to each other, while the middle one may be a connecting vein between them. The vein now worked is the farthest to the east. It has been opened by several shafts along its line below the steep cliff for a distance of several hundred feet; and these shafts are connected by underground levels, within, however, only from 17 to 30 feet of the surface. These superficial workings were laid out, perhaps not with good judgment, for the permanent advantage of the mine, in order to secure the masses of copper found in the vein at this level. The metal occurs precisely as at the Cliff and North American Mines, in sheets, masses, and stamp work, the masses lying along the vein on edges of indefinite length and depth; their thickness here, so near the surface, seldom exceeds eight inches, but they may be traced almost uninterrupted for about 300 feet along the level. Below the mine is not proved; but with so extraordinary a show of copper at so shallow a depth, there can be little doubt as to the ultimate value of the mine. A considerable amount of rich stamp work and masses have been already extracted; but as the mine is comparatively new, no shipments have yet been made. A large force is at work mining, making roads and surface improvements and in putting up a set of stamps. These are to be placed on a small stream a mile from the mine, and away from the road to the harbor, so that the materials will have to be hauled twice over the same ground; an expense, which, when the operations are extensive, will probably be lessened by putting up a steam engine at the mine.

A curious feature common to this mine and several others, are the evidences of mining operations, once conducted by an obscure race of people, more intelligent than the present race of Indians, and far more skilful. On the course of the veins are remains of ancient pits; and upon the surface are found stone hammers or picks of curious form—one end shaped like a wedge or chissel, the other rounded off and around the middle is a groove, as if for binding on the handle. These are made of the hardest varieties of greenstone trap, which is the hardest rock to be found, and must have required as much work to fashion as it was capable of enduring when made into a hammer. The number of these is very great, especially at the Minesota Mine, in the description of which I shall allude more particularly to these ancient workings. The pits are found scattered over the whole mining region, and they have led to the discovery of some of the most valuable veins. H.

Railroad Mismanagement.

We have read with great care, and with a desire to make every allowance, the mass of evidence taken before the Committee of Investigation on the York, Newcastle and Berwick railway. After our continual expressions of distrust in the existing direction of railway companies, and our repeated demands for a public audit, we should hardly be doing justice to ourselves and the part we have taken, if we professed ourselves at all surprised at the result. Yet we are surprised, just as a man who has heard of battles all his life is surprised when he sees one, or as a man is surprised when he first sees an elephant. With some effort of the imagination, and with more distrust of human nature than it was pleasant to avow, we certainly did conceive the possibility, not to say the probability, of utter confusion or disgraceful jockeyship in the management of railway accounts, notwithstanding the parade of auditors, general meetings, half-yearly statements, and other guarantees. But evils we dreamt of are no longer creatures of the imagination. The outlandish figure, stupendous bulk, and grotesque movements of the animal, are actually before us, and appeal to the senses. We now know what we suspected, and see what we know. When you have been to see a sight, there are always people who will ask you, "Well, did it fulfil your expectations?" or, "Were you surprised?" It would be very strange indeed, if one could so thoroughly anticipate all the prodigies of nature and of art as never to catch a reality in advance of one's conceptions. Perhaps, then, it is due to the prolific and versatile power of nature, or time, or the course of human affairs, to admit that George Hudson, his colleagues, his secretary, his auditors, and his shareholders, strike one with the idea of novelty and originality, as if we had not seen the like before, and could not quite conceive it. We wish to deal equal justice between all the actors in this wonderful story. Though the play of Hamlet without the prince himself would be very imperfect, yet the prince alone, without any body else, would be equally so. George Hudson may be the chief personage in this drama, yet he is not the only one; and he cannot be appreciated without giving the others their due.

Three years ago the York, Newcastle and Darlington company, as it was then called, resolved at Mr. Hudson's suggestion, and apparently on sufficient grounds, to purchase shares in the Sunderland docks to the amount of £75,000. From various causes, though the shares have been bought, parliamentary powers are still wanting for the operation. In the interval, however, and particularly about two years since, Mr. Hudson being chairman, made further purchases of shares so as to double the amount. He now saddles the second purchase on the company, as well as the first, and the question who the shares belong to happen to be of grave import to the possesser. The committee repudiates them, and calls on Mr. Hudson to refund the purchase money, which he has paid from the funds of

the company. We are not going into the question of Mr. Hudson's authority or intentions in purchasing the dock shares. By far the most important feature in the case is the way in which business is done by a great railway company. Last November Mr. Close, the secretary of the company, made out certain accounts, in which £125,000 was inserted as on account of the Sunderland docks, and as part of a sum total of £1,869,228. On the 13th of that month that sum total was adopted by a minute of the directors, and published next day in a printed statement, which expressly mentioned the subscription to Sunderland docks, as one of the items included in the sum, and which was confirmed by a general board on December 11th. Thus, the secretary, the directors, and the general board, all adopted a sum total which involved the purchase of the dock shares, and so assumed the question now in dispute. Last February 20, a general meeting of shareholders, summoned by advertisement, was held for the purpose of considering and approving, *inter alia*, "a bill for enabling the York, Newcastle, and Berwick railway company to make certaint branches in the county of Northumberland and Newcastle-npon Tyne, and for other purposes." All the proper praliamentiary notices of this bill had been given by repeated advertisements in numerous provincial papers At the meeting a bill was snbmitted to the approval of the shareholders. Its preamble stated, "And, whereas, it would be attended with local and public advantage, if (amongst various objects named) power were given to the said company to subscribe to the Sunderland docks, authorised to be made the Sunderland dock act, 1846; and the York, Newcastle, and Berwick railway company are willing to execute the said proposed new works, and to subscribe to the said Sunderland docks." And the 42d. section enacted that it should be lawful for the company to subscribe a sum not exceeding the sum of £150,000. The bill was adopted; and therefore, so far as regards that meeting, Mr. Hudson was thenceforth as fully authorized to purchase the second batch of dock shares as he was the first. Yet all this time, and for several months after, it appears that only Mr. Close and a director or two had the least inkling of the fact that Mr. Hudson had increased the company's interest in the docks from £75,000 to £150,000, and that the purchase were not on his own private account. The committee of directors, the general board of directors, the auditors and a special general meeting of shareholders, had all considered and approved accounts, statements, and a bill before Parliament, containing something of which the general board of directors and the shareholders at large were entirely ignorant, and which they now vehemently repudiate. Though they approved the bill, they had not the least idea of its contents, and did not even ask to see the preamble, or to have it read.

We have only space at present to notice one other charge against Mr. Hundson. It is one in which we apprehend public opinion will be far more unanimous and severe in his condemnation than in the last mentioned instance. In the summer of 1845. the company having created and allotted a quantity of shares, and certant limited remainder, of which t gave so many to Mr. Hudson. On one ground or another he became entitled to 937½. He sold them at a very large premium. But what did he sell? Only the 937½ which were his due? No such thing. He sold on his own account—that is, as if the were his own, 10,894 shares? He sold not only more than he had to sell, but more even than the company had to dispose of. Such was the premium, that on this one transaction he made a profit of £145,70.4 There was really nothing to sell, but he went on selling—that is pocketing premiums, *va infinitum*. No wonder at Mr. Hudson's fabulous wealth. It was fabulous indeed, for it consisted in receiving large premiums for promises which he had not the least power to fulfil. But what an increditable state of accounts which could allow such a transaction to sleep for four years—Mr. Hudson all the time quietly enjoying the proceeds! In order to make room for this abnormal issue of shares, the register of shareholders has been privately increased from 42,000 to 56,000. The surreptitious shares were not entered, of course, in Mr. Hudson's own name, but under the names of numerouns railway officials or private friends; the *modus operandi* uniformly being that Mr. Hudson directed the secretary to issue so many shares to such a name; and the secretary did so without any demur, though not without occasional misgiving and snrprise. We are only describing the process, having little desire to speak out at present on its motives. Mr. Hudson, who, far form's sake, had executed the company's subscription contract to the amount of 8,600 shares, and who found every body leaning upon him for assistance and advice, who also found that every thing he touched turned to gold, doubtless thought it his fate to make shares and sell them. His office was plenipotentary; so long as every thing was rising it would always be in his power to rectify any irregularities. He was the company himself, and really does not seem to have known whether it was for himself or the company that he paid or received; excepting that, as commonly happens in such cases, he found himself—quite without knowing it of course—paying on the company's behalf, and receiving on his own.—*London Times.*

Gutta Percha Tubing.

A series of interesting experiments have just been concluded at the Birmingham Water Works, relative to the strength of gutta percha tubing, with a view to its applicability for the conveyance of water. The experiments were made, under the direction of Mr. H. Rofe, engineer, upon tubes ¾ of in. diameter, and ¼ in. thick, of gutta percha. These were attached to the iron main, and subjected for two months to a pressure of 200 ft. of water, without being in the slightest degree deterioated. In order to ascertain, if possible, the maximum strength of the tubes, they were connected with the water company's hydraulic proofing pump, the regular load of which is 250 lbs. on the square inch. At this point they were unaffected, and the pump was worked up to 337 lbs., but, to the astonishment of every one, the tubes still remained perfect. It was then proposed to work the pump up to 500; but it was found that the lever of the valve would bear no more weight, The utmost power of the hydraulic pump could not bust the tubes. The gutta percha being slightly elastic, allowed the tubes to become a little expanded by the extraordinry presure which was applied, but on its withdrawal the resumed their former size.—*Mining Journal.*

Zincing of Iron.

There are, it is well known, two different methods of coating metals with zinc;—one by immersing in the molten zinc the articles required to be coated, and another by precipitating the zinc from a solution by means of galvanism. The solution most commonly used for this latter process is, a weak solution of oxide of zinc in potash ley. Numerous experiments have been recently made by M. Riepe, at the laboratory of the Society of Encouragement, at Berlin, on the solution best adapted for this purpose. The following is a summary of the results obtained:—The compounds of zinc employed by M Riepe were—a solution of sulphite of zinc, a solution of cyanide of zinc in cyanide of potasium; a solution of the double salt of chloride of zinc and sal ammoniac (salt for welding); and a solution of hyposulphite of oxide of zinc. The operation appeared to be most successful with the solution of sulphite of zinc, and with the double salt, above mentioned; but, to ensure success, the solution must be weak, and a weak galvanic current must be employed, otherwise the zinc precipitated will again seperate from the iron in the form of thin scales; if proper precautions be taken, the operation will succeed perfectly well, and the zinc may, by that means, be laid on as thick as a sheet of paper. It is scarcely necessary to remark, that the article to be coated must be well cleansed previous to performing the operation. With regaid to the preparation of salts, the following remarks will be found requisite:—The sulphite of oxide of zinc is prepared by dissolving it. water, saturated with sulphurous gas, as much hydrate of carbonate of zinc, recently precipitated, as will completely saturate the water. With respect to the ammoniacal chloride of oxide zinc, proceed as follows:—Disolve one part of zinc in hydrochloric acid, and, to this solution, add one part sal ammoniac, evaporate the liquor and crystallize, The crystals are colourless six sided prisms, translucid, easibly soluble in water, and very easily deliquescent. Cyanide of zinc, with cyanide of potassium, are comparatively too expenslve; and hyposulphite of zinc gives less satisfactory results.—

M. le Docteur L. Elsner.

Improvements in Railway Wheels, Turn-Tables, etc.

Messrs. Wm. Baker, of Eagbaston, and John Ramsbottom, of Longsight, near Manchester, have just obtained a patent for some improvements in the construction of railway wheels, and in railway turn tables, which latter improvements are applicable to certain shafts or axles driven by steam, or other motive power. The railway wheel is constructed with spokes of angle iron, which are bent into triangles, and arranged in two eccentric circles with the bases outwards, and the ends which form the spices placed together. The tire, which is made on the inner circumference, with a shallow dovetail groove, is then shrunk on to these bases, so as to draw each pair of spokes together, and the tire is held on by means of pieces of metal, which are driven into the spaces between each pair of spokes, and there held fast by riveting or upsetting. The turn-table consists of top and bottom plates, which are suitably supported on a central shaft, and constructed with a number of eccentric and corresponding grooves in their inner and opposite faces.—Spheres, cones, or cylinders, are then placed in the grooves of the lower plate, and snrve as bearings to the top plate of the turn-table. The number of Spheres, cones, or cylinders, in these grooves, diminish from the outer to the inner one in a greater proportion than would be due to the differences of their diameters. The edges of the table are provided with a rim, to shield the interior from ballast, and to support the ends of the rails of the permanent way. The bottom plate is perforated with numerous holes, some to receive the spikes for bolting it to the sleepers, and the rest to drain off the surface water. The patentees describe several modifications of the turn-table, such as forming the bottom plate of eccentric grooved rings bolted to the sleepers or suitable foundation, and constructing the rings in pieces and bolting them together; also making the top plate in segments of a circle, and riveting them together.—Sometimes the grooves are made large enough to hold two rows of sheres. Lastly, this invention consists in the application of the preceeding principle of construction to support shafts or axles; that is to say, shafts subject to great strain in the direction of their length. They are cast with shoulders, fitted on the face, with concentric grooves; opposite to the shoulders are fixed collars of hard metal, having on the face in front of the shoulders a like number of corresponding concentric grooves. A number of spheres, cones, or cylinders, are placed in the spaces formed by the grooves in the shoulders and the collars, and serve to relieve the shaft from a considerable portion of the strain. Or, if the shaft is vertical, the bearing end, and supporting heel piece, are furnished with a number of corresponding concentric grooves, and into the space so formed are placed the spheres, etc., as in the preceding case. The grooves of the heel-piece are filled with some lubricating mixture to decrease the friction.—*Claim:* The improved construction of railway wheels, and the arrangement and combination of cones, cylinders, or spheres, in the manner and for the purpose before described.

Mechanics' Magazine.

Society of Arts.

MAY 9, 1849.

Mr. Digby Wyatt, architect, read a paper on Metal-work, and its artistic design.

The paper commenced with some remarks on the absolute necessity of the study of *specific design*, in order to confine the errant imaginations of artists within reasonable bounds, and in order fully to take advantage of all the natural properties, mechanical capabilities, and recorded experiences, peculiarly belonging to all materials, in the elaboration of which it is requisite that an alliance between use and beauty should be effected. Mr. Wyatt maintained that all propriety and perfection in manufacturing design was derivable from the result of such studies, and that the more clearly the object individuality of every ingredient was preserved and enuncidated in the finished article, the more satisfactory, to both eye and mind, would the character of its ornamentation appear.

The *specific design* of metal-work was described as based on three great studies, a thorough knowledge of the general conditions of which was requisite to all who would either manufacture, compose, or criticise, in any one of its numerous ramifications. The first of these was, that of the distinctive

characteristics and appliances of each metal; the second, its form as modified by all the mechanical processes of manufacture; and the third, a thorough analytical and critical acquaintance with all the best models in which reasonable and good principles of art can be traced, and through modifications of which pleasing associations of idea may be commanded at the will of the designer. In accordance with his scheme, thus laid down, Mr. Wyatt proceeded to deduce the correct theory of the manufacture of each metal from the properties with which it had been endowed by nature. He then described, at considerable length, the process by which almost all objects in metal must be produced, dwelling especially on those best harmonising with the character of each substance, and the accredited conventionalities of its use. Thus he emphaticised the refining, beating into thin sheets, wire-drawing, stamping, and torsion of gold; the beating-in plate, gilding, dead-silvering, parcel-gilding, soldering, &c. of silver; the hollow casting of bronze, by means of wax, and of moulds *a bon creux*; and the solid founding of iron in complex forms. Having disposed of the *structural* processes, Mr. Wyatt rapidly analysed the *decorative*, or superficial, enumerating and sketching out the leading peculiarities of engraving matting, niello, cooking, burnishing, the six chief divisions of enamel, and three or four varieties of damascening (*tauscia, lavoro all'agemina*). The mechanical limits of the art being thus pointed out, the impression suggested by the history of past *chef-d'œuvres* were then cursorily examined. The extreme antiquity of metal-work, and its details among the Jews, Egyptians, Assyrians, Persians, Greeks, Etrurians, and Romans, was demonstrated from descriptions furnished by various authors, and by monuments of wonderful merit still existing. The speaker then glanced at this mediæval portion of his subject, and concluded by calling attention to the beautiful examples of metal-work, ancient and modern, by which he was surrounded, and urging the necessity of a systematic recognition of first principles and practical details, to be superadded to the study of beauty and fine art in the abstract.

In addition to the articles of gold and silver-plate, the bronzes, and fine iron-castings which had been contributed to the exposition of this Society, the paper was illustrated by a quantity of beautiful specimens of ancient metal-work, most kindly lent for the occasion by Mr. Pratt, Mr. Webb, Mr. Hawkins Mr. Hardwick, and several other gentlemen. The room was hung round with a series of drawings of the highest interest, a portion of the stores accumulated by Mr. Wyatt for his forthcoming work upon the subject.

Brussel's Academy of Sciences.

On the Passage of Hydrogen Gas through Solid Bodies.—BY M. LOUZET.

If a horizontal current of hydrogen gas emanating from a capillary orifice, be directed towards a sheet of paper, held vertically at the distance of a few millimeters from the orifice, in such a manner the current may be perpendicular to the paper, the paper is traversed by the gas. But the gas does not, so to say, shift itself through the paper, as might be expected; it resumes its form of a column, and may be inflamed behind the paper with just as great readiness as if the paper were not interposed between the current of gas and the ignited body. Again, if a ball of spongy platina be placed behind the paper, and in the direction of the current of hydrogen, the metal becomes red hot; if the sheet of paper be an inch or so from the orifice, provided that the platina be placed close to the paper—or but a short distance from it. It is well to remark that the pressure under which this phenomena is effected does not exceed that of four or five inches of water.

"To my great surprise," adds M. Louzet, "I found that the hydrogen gas traversed in the same way gold and silver leaf. Thus if a ball of spongy platana be enveloped in several folds of gold or silver leaf, and a current of hydrogen gas be directed against it, it soon becomes red hot, and the gold or silver will adhere to its surface. A ball of spongy platina placed behind a leaf of tin foil, against which a current of hydrogen gas was directed, became highly heated, but without being red hot. But as tin foil is pierced with a multitude of fine holes, which may be perceived by placing a leaf between the eye and light, the phenoma is not very remarkable. If, however, the tin foil be doubled, the platina still becomes strongly heated.

"Hydrogen gas passes in the same manner through a fine membrane of gutta-percha in chloroform. But hydrogen gas will not traverse small pellicles of glass, however thin they may be obtained.

"These experiments may be very correctly performed with Doberein's apparatus for the production of instantaneous light, an apparatus well known in England."

Coal Mining 300 Years Ago.

In this age of experiment, it may be interesting to know some of the fancies in connection with coal mining in past times. In the Bodleian Library there is a manuscript, written in Greek, by one Nivandes Nucius, from which the following has been extracted:—"In this city (City) and all the neighboring country, they are accustomed to burn a certain black, shining, stony substance, producing hot embers without smoke; but when the substance (coal) has been consumed, it yields no cinders, but a very fine dust, which is scattered through the air. These stony substances they dig out of the deepest recesses of the earth, finding certain veins from which they extract them; but a peculiar prodigy takes place when they are about to commence digging. The miners are accustomed to excavate at a distance of eight or more stadia from the city, below the river, about 30 cubits or more. When they meet with this mineral, they form a spacious cavern; but they are not able to throw out the mineral immediately, for fire on a sudden bursts forth, and encompasses the whole cavern. When the miners are desirous of extracting the coal, they put on a linen garment, which has neither been bleached nor dipped in water; this covers them from head to foot, leaving only certain apertures for the eyes; they also take a staff in their hands, which serves to guide and direct their steps in the passage leading to the cave. The miner then draws near to the fire, and *frightens* it with his staff. The fire then flies away, contracting itself little by little. Having then expended itself, it collects itself together in a surprising manner, and becomes very small, remaining quite still in a corner. But it behoves the man wearing the linen garment to stand over the flame when at rest, always terrifying it with his staff. Whilst he performs this service, the miners extract the stones: but as soon as they have left the cave, the dormant fire on a sudden bursts forth, and environs the whole cave. No one then ventures to enter without the aforementioned garment and staff, for he would be inevitably consumed. And this we ourselves have beheld, being admirers of the operations of Nature." Can modern science unriddle the mystery of the garment and staff?—*Mining Journal.*

Ventilation of Mines.

From the recent experiments at Birmingham, which showed that gutta percha tubing would resist a pressure of even 337 lbs on the square inch, and the fact that it will not collapse when the atmosphere is withdrawn, it seems likely that this material will become valuable for the ventilation of mines. We find that 3 in. tubes can be made in single lengths of 50 ft., and not weighing more than from 50 to 60 lbs. each. This, together with the fact that the joints are so readily made, by simply warming the flanges and pressing them together, will render their erection in the shafts, &c., of mines a matter of comparative ease.—*Mining Journal.*

The Coal Trade for 1849.

The quantity sent by railroad, this week, is 38,038 05 by canal, 13,521 15—for the week 51 560 tons.

It is not to be denied that the coal business is unusually dull, at the present time, and that prices for small lots, forced into the market, have been less than the usual rates, but we have not yet heard of a single sale made below $1 80, for white ash and only one or two as low as that, which were forced sales to meet liabilities; but the tendency is unquestionably downward, which is aided and assisted by publications, made in certain quarters, through a morbid appetite to do mischief, and this downward tendency, if it continues, will result in a reduction of wages, which is as certain to follow as it is for water to run down stream, in spite of all the combinations and unions in the country, as we stated a few weeks ago. If the market does not require coal, it will not be purchased if offered at even $1 50, nor will it increase the demand for the article; and therefore we consider it the height of folly, since we have remained idle so long, at this critical period, to mine an excess of coal, and offer it at low rates, and thus loose all the advantages of the market for the closing three months, when it is admitted by all who have any knowledge of the business, from the demands of the market, that the trade must be brisk for that period, unless the disastrous effects of the present revenue laws of the country should prove more destructive than even the most desponding have admitted. We have always been of the impression that there could not be any increase in the consumption of this year, and have refused to endorse statements to the contrary in our columns, but we have yet to supply an increase of four hundred thousand tons, from the different regions, over the supply of last year for the balance of the season, to throw as much coal into market as was consumed that year: besides, the great number of coal yards in the various sections of the country, with but few tons in each yard, will always require about 100,000 tons as regular stock. This would require an additional increase of 100,000 tons provided the consumption only of last year is maintained.

Amount of coal sent over the Philadelphia and Reading railroad and Schuylkill navigation, for the week ending on Thursday evening last:—

	RAILROAD.		CANAL.	
	Week.	*Total.*	*Week.*	*Total.*
P. Carbon..	13,044 17	188,278 10	5,813 04	99,231 19
Pottsville...	3,959 04	80,301 04	2,161 09	30,331 16
S. Haven...	17,582 11	245,811 19	4,708 15	54,451 12
P. Clinton..	3,461 13	72,532 13	838 07	16,421 11
	38,038 05	586,924 06	13,521 15	197,437 01
		197,437 01		
total by R R & Canal		784,361 07		
to same period last year, by Railroad		725,627 69		
" " " Canal		217,172 06		
		942,799 15		

Decrease this year..158,437 18 tons.—*Mining Jour.*

English Patents.

John Coope Haddan, 29, Bloomsbury-square, C. E., for an improvement or improvements in railway wheels.—This invention consists—1. In making the spokes of wrought iron bars, which have their nave ends bent into the form of three sides of an equilateral polygon, so that the may overlap one another.—These ends may be placed radially or tangentially to the centre, and welded to one or between two cheeks, and are cut away from the centre hole of the cheek, so as not to come in contact with the axle. These spokes may either be of the L or T form, and are bent into the desired shape at the nave end by means of suitably shaped blocks.—2. the tyre of the wheel is made of less diameter at the part next the flange than in the entire, in order that the tread may be on the centre of the line rails.—3. To enable the flanged wheels to run on tramways, a ring with a plain periphery and a portion of its inside circumference chalked down to receive the flange is shrunk on. *Claim.*—The three several modes of constructing railway wheels.—*Mining Journal.*

Iron Trade.

The prospects of the iron trade are at this moment, we regret to say, a little overshadowed, that check which commerce has received by the continuances of political disturbances on the continent, has made itself somewhat too sensibly felt in the working iron districts of this kingdom. We live and thrive by the peaceful intercommunications of the trading world. It would be all the better for us if the Temple of Janus were continually shut; but it is not in human zeal, nor in human wisdom, to perpetuate the halcyon days of universal peace. In proportion however, as that is interupted, will be the interupt ion of our prosperity as a mercantile and mining people. There are other causes co-operating in the depression to which we advert; the make for some weeks past has somewhat outrau the actual wants of the world, and the lull which has fallen upon railway undertakings, and the restraints which have, unwisely as we think, been put on Government as to the increase of its steam navy, are so many ingredients which have immediately contributed to lower, for the moment, the iron markets of the United Kingdom.

We trust that no more will be made of this temporary suspension of activity than it is entitled to; that as few furnaces will be blown out; the make as little reduced; and employment as generally continued as possible under the circumstances; and we have great reason to hope, notwithstanding the somewhat serious declension of prices, that the turn things have taken, as well as the direct consequences of it, will be superficial in its depth, and short lived in its duration. In some senses, certainly, it will be an occasion for patience and forbearance on the part of those chiefly and most intimately interested in the branch of our indigenous industry; and in most of the inconveniences which will sometimes overspread our social as well as our commercial relations, feeling of this description are more likely than any others to furnish us with a remedy, or to supply an alleviation.—*Mining Journal.*

Illinois

WAUKESHA, AND MILWAUKEE RAILROAD.

The common council of Milwaukee have voted to subscribe one hundred thousand dollars to the stock of the Milwaukee and Waukesha railroad, the first link to connect Lake Michigan with the Mississippi waters. An annual tax of one per cent. is to be levied on the real estate of the city, the proceeds of which are to be appropriated to the payment of the stock, and the tax-payers to become stockholders in the road, to the amount of tax they shall severally pay. This subscription, however, is not to be binding on the city until the individual subscriptions to the stock of the railroad company shall amount to $300,000.

Internal Improvement Debt of Illinois.—The Springfield, (Ill) Journal of the 7th inst, furnishes a statistical table of the entire internal improvement debt of that State, which fixes the amount at $6,970,022-79. The greater part of this amount has been funded through the recommendation and untiring perseverance of Governor French. The canal debt and school fund debt are not included in the above amount the former being considered entirely provided for by the pledge of the canal and canal lands. That Illinois will be able to pay to the uttermost farthing her entire State indebtedness does not admit of a reasonable doubt, and that she has the disposition to do so has been made abundantly apparent from the large vote that was given in favour of the constitutional special tax for the liquidation of the principal of the State debt. Illinois once relieved from the incubus of her indebtedness, and there is no degree of prosperity and importance she may not attain.

Railroad from Chicago South—Important.—The Chicago (Ill.) *Tribune* of the 27th ult says, that a responsible company have contracted to construct the railroad from Chicago to a point in Indiana, near Lima, in LaGrange county, where it will meet the Michigan Southern railroad. They own about one fourth of the $1,600,000 they are to receive for building the road (iron being found them). It is to be completed in three years, when Chicago will be within 36 hours travel of New York, by way of the Erie railroad, as a road will be built from Toledo along the lake shores to Buffalo. Milwaukie must awake and construct a road to Chicago, thus placing themselves on the great line of rapid communication.

Virginia.

Orange and Alexandria Railroad.—At a late meeting of the President and directors of the Orange and Alexandria railroad, agents were appointed in the various counties through which the road will pass, to obtain the right of way. These agents are allowed $4 per day as a compensation for their services, and are to report monthly to the Board.

The President of the Company, Mr. Henry Daingerfield, and the chief engineer, were appointed a committee to contract for iron, of the weight of about 50 lbs. to the yard, for the Eastern section of the road.

Baltimore and Ohio Railroad.—Capt. Wm. H. Swift, of the U. S. Topographical Engineers, has resigned his post, having been elected President of this road, and the vigor of his management is already perceptible. At a meeting of the Board of Directors, held on Tuesday last, contracts upon the second letting, embracing twenty-five miles west of Cumberland, were given out. The prices are in all cases within the estimates of the engineer, and there are now 45 miles in the hands of contractors, embracing the most difficult portion between Cumberland and the Ohio. This fall, about 50 or 60 miles more will be let, which will bring the road to the Jygart's Valley River, whence a good turnpike of about 100 miles in length offers a connection with the Ohio at Parkersburgh. The remaining portion of the contracts will be awarded in the spring, and as care has been taken to give to those most difficult the advantage of a good start, it is belived the whole of them will be completed almost simultaneously.

Petersburgh Railroad.—The Petersburgh Intelligencer of the 7th inst. says:—"We are pleased to learn that the Petersburg Railroad Company has just effected a contract with our townsman, James Dunlop, Esq., who has the agency of an extensive iron manufactory in England, for heavy T rails, sufficient to relay their track as far as the Junction of the Greensville railroad. This, with the iron already laid, will make 45 miles, which will complete the rebuilding of their road as far as their heavy trade is carried. The effect of this improvement will be to greatly increase the safety, comfort and expedition of the passenger lines on the railroad, and also enable the company to carry freight with greater despatch.

In connection with this subject we are pleased to see in the Wilmington papers that the Wilmington company has also just contracted for T rails enough to relay 100 miles of their road. This will add vastly to the attractions of the inland line, and when the Manchester road is done, we think the land route will command the most of the travel between the north and south.

Vermont.

Vermont Central Railroad. There is every reason to believe that the new stock of this corporation, some twenty thousand shares, has been taken; eight thousand by the old stockholders, and the remaining twelve thousand by Mr. Quincy, the new Treasurer. From the known energy and great financial abilities of this officer, it may reasonably be supposed that the success of this enterprise is now placed beyond a doubt; and that certainly will justify the enormous salary, $10,000 per annum, which is to be paid him. It has been stated that one of the late employees of the transfer office put out some twenty seven hundred more share certificates than the capital stock would allow of, pocketing the balance over, running from 1 to 10 dollars per share, the whole proceeds amounting to some fifteen thousand dollars.—*Boston Traveller.*

Massachusetts.

The Salem and Lowell Railroad, which Mr. Livingston of Lowell has contracted to build for $250,000, ready for running, is 16 1-2 miles long. It extends from Essex railroad in South Danvers, to the Lowell and Lawrence railroad in Tewksbury. A large proportion of the land owners on the route have become subscribers to the stock.

Taunton Branch Railroad.—Directors for the ensuing year: Thomas B. Wales, Samuel Frothingham, Samuel Quincy, John F. Loring, and Wm. A. Crocker. Wm. A. Crocker of Taunton was chosen President, in place of T. B. Wales, resigned.

Boston and Providence Railroad.

A report has recently been made by the directors of this railroad, by which it appears the capital has been increased from $2,530, to $3,160,000, the limit prescribed by the act of incorporation. The increased expenditures of capital has been mainly in the construction of the Pawtucket branch and improvements at Providence. This branch opens a new route to Providence, and completes a communication between Boston and the centre of that city, and also a junction with the Stonington and the Worcester and Providence railroads; and, furthermore, shortens the line between Boston and New York about three-quarters of an hour, by obviating the detention at the ferry. The whole cost of the improvement has been 577,962 dollars. Another expensive operation was the construction of a new road from the Tell Gate station through West Roxbury to Dedham. This was undertaken to secure the company against competion in that direction; and in consequence of it, several petitions for competing lines have withdrawn their petitions. The cost of the improvement when completed will be about 285,000 dollars.

The net earnings of the road for the last year (ending July 1, 1848) were $183,139. The increase of gross receipts over the previous year was 15 per cent.; the increase of the Providence travel 7 per cent.; the way travel 45 per cent.; the New York travel 29 per cent.; New York freight 10 per cent.; and local freight 29 per cent. The road and the station houses throughout the line are said to be in a better condition than they have been at any time since the road was built. The directors express a belief, that, under a faithful and intelligent management of the superintendent, the affairs of the road have been conducted with all the economy consistent with the safe and efficient workings of the road. They subjoin to their report—what is rarely, but what the public would like to see done—a statment of the force employed in the business of the road, and the amount paid to those in its service.

This statement shows the whole number of individuals employed to be 201, with salaries as follow: President, 2,000 dollars; Superintendent, 3,000;

Treasurer, 1,500; Treasurer's Clerk, 700; Superintendent's Clerk, 360; Sup. of Transportation, in Boston, 1,500, do in Providence, 1,000; 2 Ticket Clerks, 600 each; 3 Station Baggage Masters, 83 cents per day; 6 Freight Clerks, 527 per year; 25 Laborers in Freight Department, 4 Night Watchmen, 16 Laborers in Wood and Water, 16 Switchmen, 12 Brakemen, 10 Firemen, 26 Laborers, 1.00 per day each; 13 Gate and Flagmen, 260 per year each; 8 Conductors, 539 per year each; 100 Enginemen, 648.25 per year each; Superintendent Machine Shop, 1,500 per year; 31 mechanics, wood and iron, and 4 Carpenters, 1.25 per day each; Superintendent of Road Repairs, 540 per year; Train Baggage Master, 400 per year; Fruit Agent, (in summer months) 40 per month.

Accompanying the Directors Report is the Report of the Examining Committee of the stockholders, of which Dr. Smith was Chairman. The report expresses entire satisfaction with the course of the Directors, and with the condition and prospects of the road. The committee especially commend the method of conducting the business transactions of the road. They say: "It is perfectly simple, exact, and not liable to mistakes. Although analogous to the system adopted on the Eastern road, it is superior from the circumstance that whatever is done through the day, is finished, by being settled at night. Hence, bills are not permitted to accumulate of any kind, for or against the corporation; and there are no obscurities or perplexities from that source."

AMERICAN RAILROAD JOURNAL.

Saturday, August 11, 1849.

Extension of the Baltimore and Ohio Railroad.

Proposals are invited for the Graduation and Masonary of the part of this road not already under contract between Cumberland and the Tygart's Valley river—a distance of about 103 miles. The number of sections now to be let will be about 58; of which 23 occur between Cumberland and the mouth of Savage River—18 in the glades, and the remainder on Raccoon and Three Forks creeks. The work will generally be moderate, although there are a number of sections worth the attention of contractors accustomed to heavy jobs.

Specifications and plans will be ready at Cumberland, on and after the 27 of August current. The proposals, addressed to the undersigned, will be received at Cumberland up to Saturday the 15 of September inclusive. Further information may be had at the Company's Office in Cumberland. Full testimonials will be required from those unknown to the undersigned.

By oreer of the president and directors.

BENJ. H. LATROBE, Chief Engineer.

August 9, 1848.

Railway Reports and Railway Management

False as a Bulletin, became a proverb in France from the character of these of the Great Emperor, which were better known to express what he wished to be true, than what was true in fact. We are afraid that the character of some railroad reports will give a modified expression to a similar idea. Certain it is that they convey as little knowledge of the actual state of a road, as did the bulletins of the actual condition of affairs;—both are statements of results which are desired, but not of anything actually accomplished.

We do not think for an instant, that as a general rule, directors intentionally misrepresent in their reports. These mistakes result from a good natured weakness of yielding to a desire of presenting to stockholders a favorable statement of their investments, and from a want of sufficient experience as to the actual cost of constructing a road, and keeping it in repair. Experience coming from the use of roads is now testing the correctness of these reports, and is bringing some stocks down to a low point, which, upon the strength of such reports, stood at the top of the market. We suppose that the stock of the Boston and Worcester road is, in fact, worth as much to-day, as it was when it commanded 15 or 16 per cent. more than it sells for now. Yet upon the strength of the reports of this company people were justified in paying a large premium for it. Those that made up the reports, we have no doubt, were sincere in their delusion, and as much mortified at their mistakes as those who have lost so largely in investing in this stock. The history of such roads teach a useful lesson, which should not pass unheeded by those having the management of such works.

In this country, every road of any considerable magnitude requires the united strength of those interested in its construction to build it. There is a great tendency, therefore, to build them in the cheapest manner possible. Consequently the work of repairs must be commenced almost as soon as it goes into operation. The necessity felt of deriving an income from them at the earliest possible moment, causes them to be put in operation before they are fitted to receive their equipment. The actual amount expended to put them in this condition is put out to the world as their ultimate cost, and the proportion that their earnings bear to this cost, is taken as the rate of dividends that they are capable of paying.

Upon such data, roads commence at once the payment of dividends. In the meantime, the income as fast as earned is used to complete the work of construction, and when dividend day comes round, money is hired to meet it. The work of construction and repairs still goes on, absorbing all the income of the road, and often much more. These wants have to be met with new loans, till a debt is accumulated, too unwieldly to be provided for in this manner, and an issue of new stock is resorted to, to discharge it. The same causes again produce similar results. Repeated issues of stock are made till the revenue is found inadequate to the payment of the former dividend, and a fall of stock is the necessary consequence. *The completion* of a road is looked upon as an end never to be realised, and the uncertainty of all calculations based upon reports of their affairs, undoubtedly has a tendency to often depress these stocks below their real value, and we think, may be considered as the leading cause of the great distrust now felt toward this kind of property, which so lately stood the highest in public confidence.

In this country, most of the evils of the kind we have enumerated must work their own cure. Each state adopts such a system of legislation in regard to its railroads as suits its own ideas, and we cannot expect any greater harmony in these than in other matters. The great object in the legislation of all the states upon this subject is to confer upon companies similar privileges to those enjoyed by individuals, and impose upon them similar responsibilities—conferring in addition the power necessary to the accomplishment of the objects they have in view; leaving their manngement almost entirely to the directors of their companies. Uniformity, therefore, can only result from the spontaneous adoption by companies of such a method of construction and management, as experience shall approve as best fitted to secure the great objects they have in view. Legislation in the end could accomplish no more than this. If it should act it would only give a legal sanction to such a policy as the experience had showed best adapted to the management of railroads.

Though it is foreign to the policy of our State governments to prescribe any rules for the management of our roads, it might adopt a regulation, which, without interfering with them in any respect would, we think, be followed by very beneficial results. Let each state appoint a board of railway commissioners composed of suitable persons, whose duty it shall be upon the opening of a road, or of any part of it, to report its precise condition; the amount of money already expended upon it; and the sum necessary to put it in complete order; its characteristics so far as its grade, manner of construction, nature of soil on which it runs, &c., are concerned, and in fine to report every fact necessary to give the public a precise idea of the value of the road as an investment.

Such a plan, while it would lay before the public all that it is necessary for it to know relative to any road, would leave its management entirely to its directors. It would fully protect the rights of the public without interfering with those of private individuals. It should be made the duty of such commission to report annually the condition of the various roads in a state, which we have shown would be as necessary as to do this at the opening of a road. No policy could be resorted to, that would soon secure the general adoption of the best mode for the management of railroads. And it would equally put it beyond the power of a designing director to impose upon the public, or a gambling speculator, to raise or depress the value of its shares to carry out his own schemes.

South Carolina.

Greenville and Columbia R. R. Co.

The annual meeting of this company was held at Columbia on the 7th and 8th of May last. From the report of the president and engineer, it appears that the grading of the whole line from Columbia to Anderson Court House, is in progress, a distance of about 127 miles. The section from Columbia to the crossing of Broad river, embracing the bridge over this river, a distance of 26 miles, will be in operation by the 1st of January next. Contracts have also been made for timber for the superstructure of the road from Broad river to Frog Level, within 8 miles of Newberry, to which last point, should iron be seasonably purchashed, the road can be opened early in the spring; and the remainder, with reasonable dispatch, to Anderson Court House.

From this point to Greenville nothing as yet has been done; and it is uncertain whether the people of this district will avail themselves of a charter they possess, authorising the construction of a separate road to Anderson, or whether by uniting with the above company, they will aid in extending their road to Greenville.

The construction of the Greenville and Columbia road to Anderson, will open a railway communication to the whole of the western and northwestern part of South Carolina. Efforts are making by the people of the Spartanburgh and Union districts to construct a road to connect with the above at the crossing of Broad river, or at Newberry. A road is also to be built to Laurens district from some point in this road. A cheap and expeditious means for transportation of produce throughout the whole year to the principal seaport in the State, will thus be provided, which will incalculably enhance the value of land in this remote part of the State which are now burdened by the immense cost of the transportation of its products, and which being entirely of an agricultural nature, are of great bulk when compared with their value. At present it is chiefly forwarded by river navigation, which is available only a part of the year, during which time the farmer is compelled to send his produce to a mar-

ket, whether there is a demand for it or not. This necessity often puts him in the power of the purchaser, from his inability to take care of it, after it arrives at its place of destination. With this road to forward it at pleasure, he will only do so when it will meet ready sale. This ability to forward at all times to market renders land in remote parts of the State nearly as valuable as that in the vicinity of the sea shore.

Another great advantage of this road will be the social advantages it will confer upon the inhabitants of the section through which it runs. Social intercourse is the most valued privilege of life, and the difficulty of enjoying it the great drawback in the life of the southern planter. A railroad gives him all he lacked before—society, and constant intercommunication with his fellow men. A railroad is in fact a much greater blessing to to the isolated man, than to the inhabitants of a large town or city. It gives him all the advantages they enjoy, while he is exempt from the many evils they must suffer.

The means to build this road are principally provided by the inhabitants along its line. The State is to subscribe $150,000 to it in the bonds of the S. Carolina railroad as the road progresses. A part of this subscription has been made available. With these bonds, iron sufficient to lay 35 miles of the road has been purchased of the South Carolina railroad company. It is a light rail, weighing only 25 lbs. to the yard. It is admitted that a heavier one would be preferable, but the company wisely prefers to lay this down for the present, than to involve itself in debt, for one of higher cost. As the road is not intended for high speed, this rail, with a suitable wooden superstructure, it is believed will, for the present, answer almost every purpose of the heavy rail.

It is gratifying to witness the very general interest felt toward this road by the whole population of the section through which it runs, and the sacrifices all are ready to make to secure its success—every one manifesting the same regard for its welfare as though it were his own property.

Much of the grading of the road has been done by stockholders along its line who are allowed the privilege of working out upon the road one-half of their subscriptions. This is an excellent arrangement where the work of grading is comparatively light, as planters and farmers are often in a situation to do a large amount of work, though possessing little cash means.

In connection with this road, a survey has been made of Broad river, for the purpose of ascertaining the cost of rendering this river navigable for keel boats. The entire distance for which this river is navigable is 160 miles: 100 below, and 60 above, Cherokee ford. At this place the navigation is interrupted by shoals. It is believed that for 20,000 dollars, slack water navigation could be made at these shoals, and the whole river put in good boatable condition. Efforts are to be made to obtain the aid of the State for this purpose. The river is looked upon as an important feeder to the railroad.

The officers of this company for the ensuing year are:

John Belton O'Neal, of Newberry, President.

Wm. Patton and Daniel Blake, of Charleston.

John S. Preston and Edward Sill, of Columbia.

William S. Lyles, of Fairfield District.

Drayton Nance and S. Fair, of Newberry District.

F. G. Thomas, Joel Smith and Thos. C. Perrin, of Abbeville District.

J. N. Whitner and J. P. Reed, of Anderson—Directors.

Wm. Spencer Brown, Chief Engineer.

James L. Gaunt, Secretary and Treasurer.

Pennsylvania.

York and Cumberland Railroad.

The great object of this road is to connect the city of Baltimore with the public works of Pennsylvania at Harrisburgh, by a road from York to the former place. The construction of this road has been a favorite project with Baltimore for some time past. It is being built by Gonder, Burke Co., who are well known throughout the country as extensive contractors. A gentleman connected with this firm, accompanied by Mr. Goldsborough, the Engineer of the road, have recently visited Maine for the purpose of testing the qualities of the rail laid upon the Atlantic and St. Lawrence road, which is of the Π pattern. After subjecting it to various trials they became fully satisfied of its superiority over any form of rail now in use. From its shape, the process of rolling imparts to the top of the rail a vertical position of the laminæ or grain of the iron, which effectually prevents the lamination of the rail, from which it suffers most in its rear. This firm has purchased this kind of rail for the above road at less than forty dollars per ton, delivered in Baltimore, which is at a lower figure than we have yet heard of. The road we believe is to be completed in about one year.

St. Lawrence and Atlantic Railroad.

The annual meeting of this company was held on the 7th instant. We have not yet received the report of the directors. The company resolved to take measures to push the road to the boundary.

The board of directors elected for the ensuing year is as follows:

Josiah S. Little,
John Anderson,
St. John Smith,
John B. Brown,
John Mussey,
Ezra F. Beal,
Eliphalet Greeley,
Wm. P. Fessenden,
Thomas Hammond,
Thomas Crocker,
James L. Farmer,
William W. Thomas, and
Solomon H. Chandler.

Boston and Worcester Railroad.

The report of this company, received, states that the arrangement between that corporation and the Western road has been renewed, with some modifications, for three years. The relaying of the track with heavy rail is not yet completed, but arrangements have been made to accomplish it speedily.—The new rails are to weigh 64 lbs. to the yard, to be fastened at the joints by strong chains, firmly drawn upon the ends of the rails, and each rail of six yards in length, resting upon seven substantial crossties. Thus constructed, the directors think the road will be one of the firmest and most durable in the country. The Framingham track will be soon completed. By the Report presented to the Legislature in January, it appeared that the earnings of the road for the year ending 30th November last, amounted to $688,068—an increase of $28,970 over the preceding year. During the last six months there has been a small increase of income from passengers, but a large decrease of income from freight, making an aggregate diminution of $11,811, as compared with the corresponding period of last year. The following statement of liabilities and assets is presented:

Capital stock paid in	$4,500,000
Ballance of debts, including income of the current six months—about	460,000
Total	$4,960,000
Construction accounts, including the road and its equipment, lands and buildings of every description, engines, cars, machinery, tools and fixtures of every kind, together with stock of iron, fuel, oil, materials of the repair of shops &c	$4,360,000

The report furnishes no details in respect to the financial condition, property; management or expenses of the road. Accompanying the director's report is a report of a committee of stockholders, signed by J. T. Austin, Chairman. It is generally aprobatory. The committee expresses an opinion that the surplus fund, instead of being reduced, as it was in January 1849, ought to be increased; and that no debt ought to be incurred beyond the funds provided by the stockholders.

Auburn and Rochester Railroad.—The officers selected for the ensuing year are Henry B. Gibson, John M. Sherwood, Joseph Fellows, Wm. V. J. Mercer, Jacob Gould, Wm. A. Sackett, Oliver Phelps, Charles Seymour, William Wiley, Nathaniel Thayer, William F. Weld, Alexander Duncan, E. Darwin Smith.

Hartfort and Providence Railroad—At the annual meeting of the stockholders of this road, he held on the 4th instant, the following persons were chosen directors for the ensuing year, viz:—Joseph Trumbull, Wm. H. Imlay, Alfred Smith, D. F. Robinson, Samuel S. Ward, Calvin Day, Austin Dunham, Chas. H. Northam, Amos M. Collins, James M. Bunce, and Wm. T. Lee.

At a subsequent meeting of the directors, the Hon. Joseph Trumbull was re-elected President.

The earnings of the New Haven Railroad, from January 1st to August 1st, were as follows: Nett earnings $78,056 11.

The capital of this road is two and a half millions, and a dividend of 3 per cent. was declared.

The earnings of the Harlem Road for July will be about $39,000.

Madison and Indianapolis Railroad.

At the annual election of directors for this road, in June last, the old board was unanimously re-elected. The members are R. H. Winslow, of New York; J. F D. Lannier, Jas. Whitcomb, Jesse D. Bright, James M. Ray, Joseph G. Marshall, Henry Bates, Michael M. Dunn, Samuel Moore, John Brough, and Zachariah Tannehill, of Indiana. The board met and organised on the 23d of July, when John Brough was unanimously re-elected President. W. N. Jackson is Secretary of the company. His term of service does not expire until January.

The prevalence of the cholera, we learn, has seriously affected the receipts of this road. It has brought travel in the west to almost entire stand.—Notwithstanding these drawbacks a dividend of *four per cent.* on the enlarged capital stock was declared, from the earnings of the road during the last six months, leaving a surplus eqnal to one-third of one per cent.

This is certainly a very good exhibit for a road that has as yet no other railroad connections. From its northern terminus, Indianapolis, roads radiating into every part of the state, are now in process of construction; portions of each of which will be soon in operation. Other roads to connect with this road at various points along its line are in progress, all of which must to some extent become tributaries to this road. The above is the only road in operation in Indiana;—and the good management which has characterised its concerns, has done

much to give confidence in similar undertakings in this state. To a certain degree it has stamped a character upon them all. We hope its good fortune will not tempt it into any foolish expenditure of money in the shape of expensive and fanciful depots and the like, which have run away with so much of the capital of the eastern roads.

Indiana is accomplishing a great work in her roads. Her capital is on what must ever continue to be the great line of travel between the east and the west. From this point railroads penetrate every portion of the state. Her central position, and her being the terminus of so many roads, cannot fail to make her one of the most important places in the west.

The following extracts from an Indiana paper show the relation that this road bears to others now in progress:—

The Edinburgh and Shelbyville road, 16 miles long, now about completed, diverging from the Manchester road Edinburgh, 56 miles from Madison.

The Shelbyville and Rushville road, 19 1-2 miles, nearly ready for the rails.

The Shelbyville and Knightstown road, 25 miles, will be ready for the iron 1st of March next; for the last two roads iron rails have already been purchased.

From Indianapolis to Noblesville, being a section of the Indianapolis and Peru road, running up White River 22 miles, will be graded and bridged by the 1st of April next, Their agents in the city are now purchasing their rails.

The Indianapolis and Terre Haute road, 70 miles long, will finally form a part of the great line to St. Louis is half under contract for grading and bridging The grading and bridging of the other half will be let this Fall.

The Indianapolis and Lafayette road, 65 miles, is partly under contract for grading and bridging.

The Indianapolis and Bellefontaine road has put some 27 miles, next Indianapolis, under contract for grading and bridging.

These roads are being made almost entirely by the people of Indiana, immediately interested without the aid of foreign capital.

We could give no more graphic commentary on the energy and enterprise of our people, than to state the fact that the soil of the country through which these roads pass, in the year 1820 belonged to the Indians, where the feet of white men scarcely ever trod.—*Indianapolis paper.*

Railroads in South Carolina.

The South Carolina railroad extends from Charleston to the three termini, Hamburgh, Columbia, and Camden. It is 242 miles in extent and all in successful operation. At Hamburgh it connects with the Georgia railroad system. From Columbia, in addition to the Greenville and Columbia railroad, a railroad is in rapid progress of construction to Charlotte, North Carolina, 110 miles.—At this point it forms a junction with the North Carolina Central road. From Manchester a road is now in progress to Wilmington, North Carolina, a distance of 160 miles. This is the only link wanting to unite the railroads of South Carolina and Georgia with those of the north. The South Carolina railroad forms the main trunk line of the various roads in this state which radiate from it at every direction, and when completed, will penetrate at convenient distances every portion of the state. These roads, from the nature of the soil, the general topographical features of the country, and the mildness of its climate, are of easy construction, and their cost is not beyond the ability of those sections through which they run. Whether valuable or not for dividend, they will confer a great benefit upon the state and increase the value of every kind of property to a vastly greater degree than their cost.

Rutland Railroad.

We have in hand the report of this company, submitted to the stockholders on the 20th day of June last. The road is in a state of great forwardness, and the whole line will be completed and in running order the present year. All the iron for the superstructure has been purchased and is now being delivered along the line of the road. The work of laying the track is completed from Bellows' Falls to Chester, 14¼ miles, and the grading between Chester and Ludlow (the eastern slope of the mountain) fourteen miles further, is nearly ready for the rails. The laying of the rails has also been commenced at the Burlington end, and six miles are now in running order. The grading between Burlington and Cuttingsville, 75 miles, is expected to be completed so as to occasion no delay in laying the track. There will then remain only 15 miles between Cuttingsville and Ludlow, which it is proposed to finish so that the whole line may be in running order during the present year. About $10,000 have been expended in constructing a branch road from the main line to the navigable waters of the Otter Creek at Vergennes.

According to the report of the Engineer, the whole amount of work done upon the road up to the first of June is as follows:

4,263,921	yards of	Earth Excavation.
263,058	"	Solid Rock Excavation;
15,225	"	Loose " "
31,679	"	Bridge and Arch Masonry.
19,107	"	Culvert Masonry.
16,834	"	Hardpan—paid for as such.
2,083	Lineal feet	Bridging.

Costing in the aggregate the sum of $1,214,974 53, a portion of which has been paid for in the capital stock of the company. And it is estimated that the work remaining to be done to complete the grading, masonry and bridging, on the entire line from Bellows Falls to Burlington, to prepare the road for the superstructure, is as follows:

986,269	yards of	Earth Excavation.
40,305	"	Rock Excavation.
7,190	"	Bridge and Arch Masonry.
2,066	"	Culvert Masonry.
2,938	Feet	Bridging.

Costing at contractor's prices, with a liberal allowance for corporation work unfinished, the sum of $297,278 24.

The furniture for the road consisting of twelve locomotives, of eighteen to twenty tons, have been engaged of the Taunton Company. The car furniture is in progress of construction at Brandon.

There is now due from delinquent stockholders the sum of $411,137. Of this sum, $313,222, it is estimated, will be available. Nearly the whole of the amount unpaid, is due from subscribers living on the line of the road. The floating debt of the company is $299,141, and the available means of liquidating it, including the above $313,222 amount to 415,022. The company have issued bonds to the extent of $578,058, of which the sum of 188,000 is held by English manufacturers, in part payment for rails.

The number of shares issued is now 14,666—of which 8,949 are held in the country, 4,616 in Boston, and 1,101 by contractors; 2,654 more are to be issued to contractors on fulfilment of their contracts—making 17,320, a capital stock of $1,732,000.—Paid in, $1,055,462.

The affairs of this road seem to have been managed with marked ability. All the railroads of Massachusetts, New Hampshire, and Vermont, are more or less dependant upon Boston for the means for their construction. The influence of this city was exerted strongly in favor of the rival route to the Rutland road, the Vermont Central. In the start the latter was looked upon as by far the most promising of the two, not only in reference to its business and profits, but its early completion. The friends of the former, left to rely mainly on their own efforts, felt that the most prudent and careful management was necessary to their success. Influenced and controlled by this consideration, they have quietly and with uninterrupted success, pushed forward their work, which bids fair to reach Lake Champlain as soon as its rival. Its stock is at a very respectable quotation, and we think it will pay 6 per cent. dividend from the commencement. The good management that characterised its affairs, enabled it to hire money at fair rates, and saved it the necessity of following the example of so many roads of raising means by the issue of stock at less than par value.

The officers of the road for the ensuing year are—

Timothy Follett, of Burlington,
George T. Hodges, Rutland,
Nathan Rice, Boston,
John Howe, Boston,
Benj. T. Reed, Boston,
John Elliott, Keene, N.H.,
William Henry, Bellows Falls,
Nathaniel Fullerton, Chester,
Chester Granger, Pittsford,
John A Conant, Brandon,
Charles Linsley, Middlebury,
Paris Fletcher, Bridgeport,
Samuel P. Strong, Vergennes.

President,
TIMOTHY FOLLETT.
Vice President,
George T. Hodges.
Treasurer,
Samuel Henshaw, Boston.
Assistant Treasurer and Clerk,
Samuel Swift, Middlebury.
Chief Engineer,
William B. Gilbert, Rutland

Ohio and Pennsylvania Railroad.

A meeting of the directors of this road was held last week, July 25, in Canton, Ohio, at which the following resolutions were adopted:

Resolved, That the Chief Engineer be instructed as soon as the other duties of the engineering corps will permit, to proceed with the location of the line westwardly from Wooster to the town of Mansfield, by way of the southern or Loudenville route, which is hereby adopted, as it has been ascertained by the surveys, to be the cheapest and best, and which will secure a convenient connection with Mount Vernon; and from Mansfield westwardly to some suitable point upon the line of the Cleveland, Columbus, and Cincinnati railroad, at or near Galion, so as to accommodate a line to Bucyrus, and also a connection with the railroads which are proposed to be constructed in the direction of Marion and Bellefontaine or Urbana.

Resolved, That the Chief Engineer be instructed as soon as practicable in view of the existing engagements of the department to proceed to the location of the line between Pittsburgh and the Beaver Station, and also from the State line to the Mount Union Station.

A resolution was also adopted to put the road—from Canton to Wooster—thirty-four miles—under contract, on the 28th of September next.

The above resolutions may be considered as settling not only the direction, but the terminus of this road.

The Chief Engineer, Mr. Roberts, is now on the western end of the line, and is actively engaged in promoting the rapid and safe prosecution of this great work, and we may look upon its completion at an early day as a matter beyond doubt.

Railroad Reports.

Ogdensburgh Railroad—The Annual Report of the directors of the Ogdensburgh—called the Northern—railroad, was submitted at the Stockholder's meeting on the 4th ult. The report states, in regard to the contracts for grading and masonary, that on the westerly half of the line, from Ogdensburgh to Malone, a distance of 62 miles, about half the work has been accomplished; but that on the easterly half of the road, from Malone to Rouse's Point, 55 miles, the progress has been unsatisfactory, so that the contract has been annulced, and a new one made. Arrangements have been made for advancing both ends of the line equally. The most important and critical piece of work on the road, the tunnel at the Chauteaugay crossing, constructed to conduct the river under the heavy embankment there requ ired has been successfully completed at a saving of 6000 dollars on the original estimate of $54,000.

Contracts for ties, sub-stills, bridge-timber, etc., sufficient for all the requirements of the road, have been made, and to the largest extent are executed and delivered. The fencing along the line is in a very forward state, and will be entirely completed soon. Eight thousand tons of rails have been delivered on the line. A very favourable contract has been made for the delivery of this iron at the Rouse's Point terminus—About 600.tons of chairs have been delivered to the company, and provision on favourable terms has been made for the remaining wants of the road for spikes.

The expenditures incurred for lands, now amount to $48,658. Of this there has been paid,

For station grounds at the terminus and on the line (upwards of 400 acres)	$24,017
For roadway, about 1,400 acres, (including incidental damages,)	15,047
For lands purchased to save expense of crossings	3,096
For lands purchased to secure materials for road bed	2,030
For 2,478 acres of wood land on the line of road, to insure a cheap supply of fuel, the aggregate cost of which is $5,734, there has been paid on account	2,680
For tax-sale purchases for same reason, of various lots adjacent to the road, liable to be redeemed	984
For legal and all other expenses connected with the settlements of the purchase	804
	$48,658

It is estimated that about $5,000 more will be required to complete the wants of the company for lands for every purpose and to secure all title. This includes upwards of 80 acres at the foot of navigation of the Western Lakes, with 4,000 feet of water front on one of the best harbours, 106 acres at the foot of navigation of Lake Champlain, with 2,000 feet of water-front, and from 5 to 15 acres at every eligible business point on the line of the road.

With a view of accommodating the transportation of lumber, a branch of business which cannot fail to be very large as soon as the road is opened, grounds and full convenience for a turn out track to Champlain river landing have been secured to the company, with five hundred feet of water-front, above and below which, private owners are extending Docks and Rails to accommodate the business cheaply and to any extent. The Champlain and St. Lawrence railroad company have finally concluded to continue their road from the present terminus at St. John's, to a junction with the Northern railroad at Rouse's Point, which it is their intention to have completed by next season.

The original capital subscribed, on which the first assessment has been paid, represented 40,000 shares or $2,000,000; of these, there have reverted to the company from various causes.....4,054 shares, and there is estimated upon recent and careful investigation, as bad and doubtful stock subscriptions.....2,166 shares,

together.....6,220 shares,

whereby the immediately available capital of your company has been reduced to.....33,780 shares, or.....$1,689,000

on this there has been paid, to date,.....$1,268,600

leaving a balance for collection of.....$420,400

of which there is secured and applicable under contracts for construction and equipments of the road, entered into with responsible parties, about..$257,000 leaving otherwise collectable.....$169,000 with 6,220 shares, the property of the company undisposed of.

The expenditure of the company, to date, amounts to $1,325,977. The first complete estimate of the road was rather under $3,000,000. It is now thought upon renewed investigation, that, that sum will not be materially exceeded, and with so large a portion of the work completed, with every real difficulty overcome, or brought into measure, reasonable reliance can be placed on present estimates. The Directors look for the means necessary for a proper continuance of the work, to an issue of bonds by the company. The condition on which it is proposed to issue these bonds, contemplates an investment at not less than par, at 7 per cent. per annum interest, to become reimbursable in five to fifteen years.

Twelve miles of the road from Champlain village, (connecting with the Champlain river landing,) to Centreville. are ready for business; to this will be added fifteen miles by the month of September, and if required, the road can be further opened this season to Chateauguay, a distance of forty.five miles from Lake Champlain. Of the remaining distance, west, about fifty miles are further advanced than any other portion of the Line, of same extent, and the entire work is at present, in so forward a state, that it requires but an ordinary exertion of the same means hitherto employed, to ensure the opening of the whole Line by the summer of next year:

Depreciation of Railways and Railway Plant.

Shareholders have found such extreme facilities in the investment of capital in railways, and in its withdrawal therefrom, that the have generally been led to regard their ieterest as of very short duration, and have evinced a distaste for any consideration of such subjects as depreciation, deterioration, destitution, or renewals. They are, therefore or have been, too willing to place their property in the care of persons who deal largely in promises; and the men who profess to give the highest dividend are the men after heir own hearts. A short time ago, we heard that the expenses charged to revenue for repairs, were to the full adequate to the maintenance of the plant and way up to its original value. New engines were indeed provided, but these were understood to be for new lines and extensions two for every three miles. Slumbering on the brink ot this financial precipice, the shareholders are all at once awakened to the recognition of the fact—that the works of man are not of infinite duration that wear and tear and decay are consistent with the laws of nature; that no machine is so perfect, but it will in time finally become unservicable; aud that even the elementary materials of which the engines and way are composed are inherently liable to change.

The facts which experience brings to our aid shew that the deterioration of carrying stock—engines and vehicles of all kinds—is at the rate of about 10 per cent. per annum; that is, the plant is capable of being kept in repair, on the average for ten years, after which an entire new stock must be provided. If, thetefore, the cost of such plant be on any line £40,000, the sum of £40,000 must be provided yearly out of revanue from the date of purchase, to renew it as worn out. But at compound interest of 5 per cent., £31,800 instead of £400,000 would be annually chargeable to this account to revenue. The elaborate report of the officers of the London and North-Western railway, just published, shows further, that a large sum must also be annually set aside; to accuumlate at at compound interest, to meet the decay and restitution of rails, chairs, and sleepers. For the first few years after the completion of a railway, the reparation in this department is necessarly light; but in seven or eight year after the opening, the sleepers, rails, and chairs evince signs of decay which cannot be mistaken.—Lines laid down for engines of eight or nine tons weight have been required to bear engines of twenty tons and upwards, and rails and chairs of greater weight have been laid down to support the additional weight of such engines, the cost of which replacement has usually been charged to capital, after allowing for the light rails and chairs removed.

The sum which has been estimated as requisite to be set apart yearly on interest, to accumulate at 4½ per cent., to re-place the rails, chairs, and sleepers, at the expiration of twenty years—the componnd term of their duration— is £320 per mile; and assuming that a railway is being relaid at the rate of £160 a mile, and changing that amount against its revenue, there still remain £160, more to be set aside for every mtle of line open. Although the duration rails, chairs, and sleepers, may and does vary respectively, and on every line of railway is depended partly on the great or less number and weight of engines and trains, partly on the efficient balasting, preparation of sleepers, and other causes, there can be no doubt that from £100 to £200 a mile is required on every line to be set aside, over and above the cost of ordinary reparation, as charged in the published accounts of revenue on all lines—not even, in this case, excepting the North-Western line, where, as regards financial matters, that company has been justly distinguished for its pre-eminent prudence.

Railway shareholders have been flattered into the belief that their property is altogether independent of the incidents of other commercial enterprises; and hence they have been led to disregard the commonest principles of economy, which the nevertheless fully admit and recognise in all their private and personal undertakings. The London and North-Western company, therefore, merit the praise of pre-eminence only because the have ventured boldly to apply the doctrines of common sense to so transcendental a thing as a railway is supposed to be. The bargains made by many companies to lease or other companie's lines, and to divide profits beyond a fixed per centage, have rendered it essentially nevessary to ascertain what a line *really* produces as profits of working, lest it should turn out that, after paying dividend out of capital for a series of years, they sqould find it necessary to stop all payments whatever, beyond the guaranteed amount, for many years afterwards.

Now that wear and tear, and reparations are admitted to be chargeable on revenue—and which they necessarly will be, reason or none, when tne capital account is closed—we augur favourably for the railway interest at large; not only from the exclusion of wild

competition, but from the establishment of this species of property on an unassailable basis of commercial security.—*Railway Record.*

On Gold, and Gold Mines.

BY WILLIAM BYRKMYRE.

No. 11.—*Gold Diggings, or Washings, and Gold Mines.*

Until of late years, it was generally supposed that gold was confined to few countries; and associated with but few minerals. More recent researches, however, have demonstrated that opinion to be fallucious; for this metal is now found in very considerable quantities in (besides the well known gold countries) the great eastern region of Siberia, the United States and also in their new acquisition, Upper California; and it is also said to be found abundantly in the southern part of New Holland. In smaller quantities it is found in England, Wales, Ireland, and Scotland, and in nearly every country in Europe. Besides the usual substances containing gold, it is now ascertined that limestone in Russia affords a certain per centage of the metal; and it is also known to exist in magnetism limestone. I have seen it in malachite (hydrous carbonate of copper), and which may explain why gold exists in such quantities in the fine copper of Chili and Japan, and why it is likely to be found in the copper smelted in South Austrilia From the above facts, there can be no doubt that gold is neither limited to few localities nor to few minerals, and were it sought for in the substances not possessing the usual color, it would be found still more abundantly.

It is also generally believed that the purest metal comes from Africa; but late experience has proved that as fine gold comes from 56° north latitude as ever came from the torrid regions of Africa. There can now be no doubt that it is a vulgar error, nearly as great as the supposition that coals were only to be obtained in Great Britain; while, in fact, they are found abundantly in other countries, and of excellent quality, and were, probably, mined for in one country—China, to wit—long before the inhabitants of our own isle were aware of the inexhaustible treasurs they possessed.

A great deal has been said of the pernicious effects arising from gold mines; but, were a comparison instituted between them and the cotton trade, it is probable that most persons who have made the inquiry will admit that they are not one half so destructive to health or morals as the cotton trade of this country and the United States, as at present conducted.

In regard to the gold of the ancients, it appears that in the time of the Jews much gold was produced from Ophir, probably Ethiopia; where, indeed, in the adjoining country a Rusian engineer has lately announced that gold exists in as great abundance in his own country. Under the Persian empire immense quantities were obtained in Lydia, Phrygia, and the north eastern part of the empire, probably in the very regions which now yield so abundantly in Russia, more especially the southern ranges of the Altia Mountains, known as the Tar Bargatai. Under Philip and his son, Alexander the Great, the Greeks raised gold from productive mines in Thrace and Thessaly. During the Roman empire it was obtained—besides the usual sources in Asia and Africa—in Northern Italy, the Pyrenees, Spain, and in Transylvania.

The dark ages were not favorable to the developement of the gold and silver mines, and their produce generally fell off to a great extent; but, notwithstanding this period—and the enormous sum of £178,000,000. in gold and silver possessed by one king, Ptolemy Philadelphus, there can be little doubt that mankind do now possess more of the precious metals than at any former period of the world's history; though, probably, no single state can now command near so much as the successor of the great Alxander. The fact that America alone has poured forth treasure up to the beginning of the present year, to the prodigious sum of £1,511,000 000, which is according to the best data I can find, will induce the belief that, great as were the precious metals in antiquity, still their amount is now more than rivalled, al beit the wear and tear of the £1,511,000,000, in the 357 years that the New World has been known to Europeans.

In Great Britain, gold was found in the time of the Romans, and was one inducement for them to conquer the country; but it does not appear to have been got in any great quantity until the time of James IV., in whose reign a good deal was found in Scotland, and also in that of his successor, James V. According to Pennant, no less than £300,-000. sterling of gold was found in the reign of the latter; but that amount is no great sum, when compared with the value of the mines of iron ore in the same country--Scotland having, last year, produced 580,000 tons of cast iron which at the present price of £2 4.s per ton, amounts to the large sum of £1,226,-000 in a year, which is about 25 per cent. of the value of the rich gold mines of Russia; in the short space of 20 years, one country has increased from 37,000 tons of cast iron, which, at the *then price* of £5 10s. per ton, was equal to £207,350; and the other has increased from 23,054 lbs. troy of gold, of the value of £1,076,198 to 87,756 lbs. of the value of £4,1000,000 I have taken the produce for last year of the Russian mines to be 2000 poods; for though a statement lately appeared in the "City Article" of the *Times*, that the produce was less than the previous year, it is quite possible that that statement may refer to the quantity actually *received* at the Royal Mint during the year, and not the total produce of the mines; for usually 200 to 300 poods are excepted to be transmitted as the complement of the produce of the year, which would make the yield for 1848 equal to 2000 pods.

For Sale.

A TURN TABLE, thirty feet in diameter, made by Aldrich of Worcester, nearly new, and in good order, will be sold at a low price, enquire of

JONA. EDWARDS, *President.*
Troy and Green bush Railroad,
Troy, New York.

July 28, 1049.

To Contractors.

BLUE Ridge railroad.—Proposals will be received by the undersigned at his Office in Brooksville, Albermarle county, Va., until the 1st of October next, for the construction of the tunnel through the Blue Ridge, together with the deep cut and embankment connected therewith at each end.

The tunnel will be 4,260 feet long, 16 feet wide and 20 feet high, with a ditch on each side: it will slope eastwardly at the rate of 66 ft. to the mile, and pass 700 feet below the top of the mountain.

Proposals will be received either for the whole or for one-half, it being distinctly stated, in this case, whether the Eastern or Western half is bid for.

Proposers are requested to examine the localities before bidding, and will obtain from the undersigned all necessary information.

The payments will be CASH, with a suitable reservation till the completion of the contract. The best testimonials and an energetic prosecution of the work will be expected,

Printed forms of proposals will be furnished on application to the undersigned.

By order of the President and Directors,
C. CROZET,
Engineer Blue Ridge Railroad.

Brooksville, July 26, 1849,

Samuel Kimber & Co.,
COMMISSION MERCHANTS

WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite Pig Iron, Hammered Railroad Car and Locomotive Axles, Force Pumps of the most approved construction for Railroad Water Stations and Hydraulic Rams, etc., etc.

July, 27, 1849.

To Contractors.

SEALED PROPOSALS will be received at the office of the James River and Kanawha Company in Richmond, until the 20th day of August next, for the construction of the connection of the Company's Canal with the tide water of James River at Richmond, from the Basin along the line of the old locks, and through the Richmond dock. This work will consist of five locks of 13 8-10 feet lift, with short intermediate basins, such culverts, walls, wastes, street bridges, &c, as shall be necessary; the raising of the walls and embankment of the present Dock; the extension of the Dock a few hundred feet eastwardly; and the construction of an outlet lock at the lower end thereof, capable of admitting the largest vessels coming to the port of Richmond.

Sealed proposals will also be received at the same time and place, until the same date, for the construction of the following works:

1. For the construction of the connection of the Company's canal with the Rivanna river at Columbia. This work will consist of a canal four and a half miles long, a timber dam across the Rivanna river at Stillman's Mills, a stone guard-lock, and several culverts.

2. For the construction of the connection of the Company's canal with the James River at Cartersville.--This work will consist of a timber dam across James river, the excava ion of a basin at Pemberton, and a canal from Pemberton to James river 1000 feet long, with a lock of 15 feet lift.

3. For the construction of the connection of the Company's canal with the James river Near new Canton.—This work will consist of a timber dam across James river, the excavation of a canal 1200 feet long, and a lock of 6 feet lift.

4. A wooden bridge across James river at Hardwicksville 724 feet long, supported by stone piers about 140 feet apart.

5. a wooden bridge across James river at Bent Creek 870 feet long, supported by stone piers about 140 feet apart.

This work will be paid for in current bank notes. Besides the usual reservation of 20 per cent. on the monthly estimates, the contractor or contractors will be required to give ample security, satisfactory to the board of Directors, for the completion of the work at the time and in the manner specified in the contracts.

Plans of the above work will be exhibited, and specifications thereof delivered to the contractors, at the Company's office in Richmond, by the 5th day of August next, on application to Mr. E. H. Gall, the Engineer in charge of the tide water connection and Mr. John Cooty, the engineer in charge of the other works above enumerated. After the receipt of the proposals, time will be taken for the consideration thereof until the 23d of the same month, on which day, in case the proposals should be found satisfactory, the several jobs, as above advertised, will be let.

WALTER GWYNN.
Chief Engineer J. R. & K. Co.

Richmond, July 18, 1849. 3t29

Journal of the Franklin Institute of the State of Pennsylvania, for the Promotion of the Mechanic Arts.

The oldest Mechanical Periodical extant in America, is published on the first of each month in the City of Philadelphia. It has been regularly issued for upwards of twenty-three years, and is carefully edited by a committee of scientific gentlemen appointed for the purpose, by the Franklin Institute.

The deservedly high reputation, both at home and abroad, which this Journal has acquired and sustained, has given it a circulation and exchange list of the best character, which enables the Committee on Publications to make the best selection from foreign Journals and to give circulation to orignal communications on mechanical and scientific subjects, and notices of new inventions; notices of all the Patents issued at the Patent Office, Washington City, are published in the Journal, together with a large amount of information on Mechanics, Chemistry, and Civil Engineering, derived from the latest and best authorities.

This Journal is published on the first of each month, each number containing at least seventy-two pages, and forms two volumees annually of about 432 pages each, illustrated with engravings on copper and on wood of those subjects which require them.

The subscription price is Five Dollars per annum, payable on the completion of the sixth number; and it will be forwarded free of postage when five dollars are remitted to the Actuary (postage paid) in advance for one year's subscription.

Communications and letters on business must be directed to "the Actuary of the Franklin Institute, Philadelphia, Pennsylvania," the postage paid.

WILLIAM HAMILTON,
Actuary, F. I.

Patents for Inventions.

THE Subscriber offers his services for the procuration of Patents in the UNITED STATES; in the CANADAS and other British Colonial possessions; in the SPANISH, FRENCH and other WEST INDIES.

ALSO IN EUROPE.

ENGLAND WITH COLONIES; SCOTLAND and IRELAND. FRANCE, BELGIUM HOLLAND, etc.

☞ The foreign patents are procured through special agents, established by, and solely responsible to this establishment. At this office may be obtained all documents required in patent business; *Deeds, Conveyances, Agreements, Assignments*, etc. Counsel given on questions involving points of law in Contested Cases, and written opinions, on the title claims, etc., where the validity of a Patent is questioned.

MECHANICAL ENGINEERING DEPARTMENT.

Drawings of all kinds furnished to parties who wish to prosecute their own patent business. Accurate working drawings for Pattern Makers or for making Contracts with Manufacturers; calculations and drawings made, for constructing difficult and complicated machines or parts of machines. Draughtsmen furnished to take Drawings of Mills, Mill Sites, and Machinery, in any part of the country.

Pamphlets, containing full information on the above subjects, furnished gratis.

JOSEPH P. PIRSSON, Civil Engineer,
Offic, No. 5 Wall St.

Steam Boiler Explosions.

THE Subscriber having been appointed sole Agent for Faber's Magnetic Water Gauge, is now ready to supply the trade, and also individuals with this celebrated instrument. Besides the greatest safety from explosion resulting from its use, it is a thorough check against careless stoking and feeding. In marine engines it will regulate the exact quantity required in the "blow off." Pamphlets containing full information, can be had free on application to the Agent,

JOSEPH P. PIRSSON,
Civil Engineer, 5 Wall st.

Situation Wanted,

AS an Engineer on a Canal or Railroad, by a gentleman from Germany, who is familiar with the English and French languages, and who has for seven years been engaged in the study and practice of Engineering and the Superintendence of Public Works. Address

LEWIS BURYER,
2t26 64 Avenue B, New York.

ENGINEERS.

Arrowsmith, A. T.,
Buckfield Branch Railroad, Buckfield, Me.

Bancks, C. W.,
Engineer's Office, Southern Railroad, Jackson, Miss.

Berrien, John M.,
Michigan Central Railroad, Marshall, Mich.

Clement, Wm. H.,
Little Miami Railroad, Cincinnati, Ohio.

Fisk, Charles B.,
Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,
Fitchburgh Railroad, Boston, Mass.

Floyd-Jones, Charles,
New York and Harlem Railroad Extension, Croton Falls, N. Y.

Ford, James K.,
New York.

Gzowski, Mr.,
St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,
Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,
Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,
Binghamton, New York.

Holcomb, F. P.
Southwestern Railroad, Macon, Ga.

Higgins, B.
Mansfield and Sandusky Railroad, Sandusky City, O.

Johnson, Edwin F.
New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,
Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,
Worcester and Nashua Railroad, Worcester, Mass.

Morton, A. C.,
Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,
South Carolina Railroad, Charleston, S. C.

Nott, Samuel,
Lawrence and Manchester Railroad, Boston,

Reynolds, L. O.,
Central Railroad, Savannah, Ga.

Roberts, Solomon W.,
Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Robinson, James P.,
Androscggin & Kennebec Railroad, Waterville, Me.

Schlatter, Charles L.,
Northern Railroad (Ogdensburg), Malone, N. Y.

Stark, George.,
Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,
Pottstown, Pa.

Trimble, Isaac R.,
Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,
United States Fort, Bucksport, Me.

Thomson, J. Edgar.,
Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,
Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,
Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,
Milwaukie, Wisconsin.

BUSINESS CARDS.

To Railroad & Navigation Cos.

MR. M. BUTT HEWSON, *Civil Engineer*, offers his services to Companies about to carry out the surveys or works of a line of Navigation or Railroad. He can give satisfactory references in New York City as to his professional qualifications; and will therefore merely refer here to the fact of his having been engaged for upwards of two years conducting important Public Works for the British Government.

Communications will find Mr. Hewson at the office of the Railroad Journal, 54 Wall Street, New York.

J. T. Hodge,
NO. 1 NEW STREET, NEW YORK.

James Laurie, *Civil Engineer*,
No. 23 RAILROAD EXCHANGE, BOSTON, MASS.

Railroad Routes explored and surveyed. Estimates, Plans and Specifications furnished for Dams, Bridges, Wharves, and all Engineering Structures.

October 14, 1848. 6m*

James Herron, *Civil Engineer*,
OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,
PATENTEE OF THE
HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans, may be seen at the Engineer's office of the New York and Erie Railroad.

Dudley B. Fuller & Co.,
IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,
NEW YORK.

Cruse & Burke,
Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY., N. Y.

Drawings, specifications and surveys accurately executed. Pupils instructed theoretically and practically at a moderate premium.

May 26, 1849.

To Railroad Companies.
—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.
NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck, Tender, and Car Wheels—made from the best American Iron. Address E. S. NORRIS.

May 16, 1849.

Manning & Lee,
GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,
BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works. Maryland Mining Company's Cumberland Coal 'CED' —'Potomac' and other good brands of Pig Iron.

IRON.

THE NEW JERSEY IRON CO'S WORKS AT Boonton, are now in full operation, and can execute orders for Railroad Bars of any required pattern, equal in quality to any made in this country. Apply to J. F. MACKIE,
Nos. 85 and 87 Broad St.

New York, June 8, 1849.

Railroad Iron.

OF approved T patterns, weighing 56 to 60 lbs. per lineal yard, made by the best English manufacturers, and under our own specification and inspection. In store and to arrive. For sale by

DAVIS, BROOKS, & CO.,
68 Broad street.

New York, June 1, 1849. tf

☞ The above will favorably compare with any other rails.

Railroad Iron, Pig Iron, &c.

600 Tons of T Rail 60 lbs. per yard.
25 Tons of 2½ by ½ Flat Bars.
25 Tons of 2½ by 9-16 Flat Bars.
100 Tons No. 1 Gartsherrie.
100 Tons Welsh Forge Pigs.

For Sale by A. & G. RALSTON & CO.
No. 4 So. Front St., *Philadelphia.*

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR
IRON FOUNDRY AND MACHINE SHOP
In complete operation, are prepared to execute faithfully and promptly, orders for
Locomotive or Stationary Steam Engines,
Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills,
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Machinery for cutting all kinds of Gearing.
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Railroad Wheels with best faggotted axle, furnished and fitted up for use, complete

☞Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

☞ Old Machinery Renewed or Sepaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Railroad Iron.

THE TRENTON IRON COMPANY ARE NOW turning out one thousand tons of rails per month, at their works at Trenton, N. J. They are prepared to enter into contract to furnish rails of any pattern, and of the very best quality, made exclusively from the famous Andover iron. The position of the works on the Delaware river, the Delaware and Raritan canal, and the Camden and Amboy railroad, enables them to ship rails at all seasons of the year. Apply to

COOPER & HEWITT, *Agents.*
17 Burling Slip, New York.

October 30, 1848.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing, from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1¼ to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address J. F. WINSLOW, *Agent,*
Albany Iron and Nail Works.

Pig and Bloom Iron.

THE Subscribers are Agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Juniata Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,
Vine Street Wharf, Philadelphia.

Railroad Iron.

RAILROAD IRON & LOCOMOTIVE TIRES imported to order, and constantly on hand, by

A. & G. RALSTON,
4 South Front St., Philadelphia.

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, Alleghany county, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention. J. F. WINSLOW, *President*
Troy, N.Y.
ERASTUS CORNING, Albany.
WARREN DELANO, Jr., N.Y.
JOHN M. FORBES, Boston.
ENOCH PRATT, Baltimore, Md.

November 6, 1848.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,
PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.
Best and 2d gy. Sheet Steel—for saws and other purposes.
German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.
Genuine "Sykes," L Blister Steel.
Best English Blister Steel, etc., etc., etc.
All of which are offered for sale on the most favorable terms by WM. JESSOP & SONS,
91 John street, New York.
Also by their Agents—
Curtus & Hand, 47 Commerce street, Philadelphia.
Alex'r Fullerton & Co., 119 Milk street, Boston.
Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

Railroad Iron.

100 Tons 2½ x ⅜, | 30 Tons Railroad.
All fit to re-lay. For sale cheap by
PETTEE & MANN,
228 South St., New York.

May 16, 1849.

MANUFACTURE OF PATENT WIRE ROPE and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tillers, etc, by
JOHN A. ROEBLING, *Civil Engineer,*
Pittsburgh, Pa.

These *Ropes* are now in successful operation on the planes of the Portage railroad in Pennsylvania, on the Public Slips, on Ferries, and in Mines. The first rope put upon Plane No. 3, Portage railroad, has now run four seasons, and is still in good condition.

Iron.

THE Works of the New Jersey Iron Company at Boonton, N. J., having been recently enlarged and put in good repair, the company are prepared to receive orders for Iron, which will be executed with dispatch; and they warrant their iron equal in quality and finish to any in this country.

½ Round and square, to 6 inches.
½ Flat 4 "
Ovals, half-ovals and half-round.
Hoop, band and scroll iron.
Nail plates, superior charcoal Horse shoe,
Iron, sheet and Boiler iron,
Tire iron for locomotives,
Railroad spikes.
Pig iron of superior quality for chilling.
do. for foundry purposes,
For sale by JOHN F. MACKIE,
85 & 87 Broad Street,
Sole agent for the New Jersey Iron Co,

June 9, 1849.

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO contract for the delivery of English Railroad Iron of favorite brands, during the Spring. They also receive orders for the importation of Pig, Bar, Sheet, etc. Iron. THOMAS B. SANDS & CO.,
22 South William street,
February 3, 1849. New York.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO take orders for Railroad Iron to be made at their Phœnix Iron Works, situated on the Schuylkill River, near this city, and at their Safe Harbor Iron Works, situated in Lancaster County, on the Susquehannah river; which two establishments are now turning out upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly supplied with rails of any required pattern, and of the very best quality.

REEVES, BUCK & CO.,
45 North Water St., Philadelphia.

March 15, 1849.

Railroad Iron.

THE Undersigned offer for sale 3000 Tons Railroad Iron at a fixed price, to be made of any required ordinary section, and of approved stamp.

They are generally prepared to contract for the delivery of Railroad Iron, Pig, Bar and Sheet Iron—or to take orders for the same—all of favorite brands, and on the usual terms. ILLIUS & MAKIN.
41 Broad street.

March 29, 1849. 3m.13

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,
No 57 South Gay St., Baltimore, Md.,

Offer for sale, *Hot Blast* Charcoal *Pig Iron* made at the *Catoctin* (Maryland), and *Taylor* (Virginia), *Furnaces; Cold Blast* Charcoal Pig Iron from the *Cloverdale* and *Catawba*, Va., Furnaces, suitable for *Wheels* or *Machinery* requiring *extra* strength; also *Boiler* and *Flue Iron* from the mills of Edge & Hilles in Delaware, and *best quality Boiler Blooms* made from *Cold Blast Pig Iron* at the *Shenandoah Works*, Va. The productions of the above establishments can always be had at the lowest market prices for approved paper.

American Pig Iron of other brands, and *Rolled* and *Hammered Bar Iron* furnished at lowest prices. Agents for *Watson's Perth Amboy Fire Bricks*, and Rich & Cos. New York Salamander Iron Chests.

Baltimore, June 14, 1849. 6 mos

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 25, 1849.

American and Foreign Iron.

FOR SALE,

300 Tons A 1, Iron Dale Foundry Iron.
100 " 1, " " "
100 " 2, " " "
100 " " Forge "
400 " Wilkesbarre " "
100 " "Roaring Run" Foundry Iron.
300 " Fort " "
50 " Catoctin " "
250 " Chikiswalungo " "
50 " "Columbia" "chilling" iron, a very superior article for car wheels.
75 " "Columbia" refined boiler blooms.
30 " 1 x ¼ Slit iron.
50 " Best Penna. boiler iron.
50 " "Puddled" "
50 " Bagnall & Sons refined bar iron.
50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,
64 South street
New York.

PATENT HAMMERED RAILROAD, SHIP & BOAT SPIKES.—The Albany Iron Works have always on hand, of their own manufacture, a large assortment of Railroad, Ship and Boat Spikes from 2 to 12 inches in length, and of any form of head From the excellence of the material always used in their manufacture, and their very general use for rail roads and other purposes in this country, the manufacturers have no hesitation in warranting them fully equal to the best spikes in market, both as to quality and appearance. All orders addressed to the subscribers at the works will be promptly executed.

JOHN F. WINSLOW, *Agent.*
Albany Iron and Nail Works, Troy, N. Y.

The above Spikes may be had at factory prices, of Erastus Corning & Co Albany; Merritt & Co., New York; E. Pratt & Bro. Baltimore, Md.

LAP—WELDED WROUGHT IRON TUBES

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,
Patentee.
28 Platt street, New York.

Roman Cement,

OF the best quality, now landing from ship Hendrick Hudson, from London, made by Billingsley, Mial & Co., and superior to anything of the kind manufactured in England. For sale by G. T. SNOW,
109 Water Street, New York.

Large Wooden Pumps.

SEVERAL Large Wooden Square Pumps, of various sizes from 6 to 24 inches, and lengths from 10 to 25 feet, strongly bolted and strapped together with wrought iron; and used to great advantage on the Boston Water works; also two screw pumps each 25 feet long and 2½ feet in diameter, are now for sale by the Boston Water Commissioners.

For further particulars inquire at No. 119 Washington Street, Boston, or of E. S. CHESBROUGH, West Newton,

June 8, 1849.

P. S. DEVLAN & CO's Patent Lubricating Oil.

THE Subscribers invite the attention of Railroads, Steamboats, Machinists, etc., to the above article of Oil; they are prepared to supply it in any quantity. Certificates of its superiority over all other oils, from several of the largest Works and Railroads, can be seen at our office. KENNEDY & GELSTON,
5½ Pine street, New York,

Sole Agents for the New England States and State of New York. 1y14

TO RAILROAD COMPANIES AND MANUfacturers of Railroad Machinery. The subscribers have for sale American and English Bar Iron, of all sizes; English Blister, Cast, Shear and Spring Steel; Juniata Rods; Car Axles, made of double refined iron; Sheet and Boiler Iron, cut to pattern; Tires for Locomotive Engines, and other railroad carriage wheels, made from common and double refined B. O. Iron; the latter a very superior article. The Tires are made by Messrs. Baldwin and Whitney, Locomotive Engine Manufacturers of this city. Orders addressed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in the order, a fit to those wheels is guaranteed, saving to the purchaser the expense of turning them out inside.

THOMAS & EDMUND GEORGE,
a45 N. E. cor. 12th and Market sts., Philad., Pa.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 18 inches stroke of piston. Tenders on 4 wheels. Address JAMES ROWLAND,
Prest. Beaver Meadow Railroad & Coal Co.,
Philadelphia.
or, L. CHAMBERLAIN, Sec'y,
at Beaver Meadow, Pa.

May 19, 1849. 20tf

India-rubber for Railroad Cos.

RUBBER SPRINGS—*Bearing and Buffer—Fuller's Patent—Hose* from 1 to 12 inches diameter. Suction Hose. *Steam Packing*—from 1-16 to 2 in. thick. *Rubber and Gutta Percha Bands.* These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.

New York, May 21, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee. G. A. NICOLLS,
Reading, Pa.

Large Pumps.

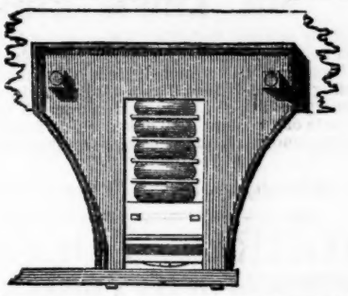
THE Boston Water Commissioners offer for sale a large number and variety of Wooden Square Pumps, used in clearing excavations from water during the construction of the Aqueducts.

Also Two Large Screw Pumps, each 25 feet long and 2½ feet in diameter.

For further particulars, enquire at the office of the Water Commissioners, 119 Washington St., Boston, or of E. S. Chesbrough, West Newton.

May 19, 1849. 6w20

Patent India-rubber Springs.



FULLER & CO. beg that parties interested in the use of these Springs will not be misled by ex parte statements, but will examine the actual Patents and judge for themselves.

The statements made by Messrs. Crane & Ray shall be treated seriatim.

They claim to have first introduced India-rubber Springs about two years since, whereas they were used by Fuller & Co. nearly four yeas ago.

They claim the exclusive right to use Sprngs. They have no right whatever; every spring they make is an infringement upon Fuller's patent, dated 1845. They claim the sole right to make India rubber, and apparently think because a species of India-rubber was patented some years since, that no person can make any other now. A patent was *granted in January last* to Messrs. Tyer & Helm for a new and improved kind of Vulcanized rubber which is used by Fuller & Co.

Fuller's springs it is needless to say are in very general use, although Messrs. Crane & Ray pretend that they know of only one or two instances. Fuller & Co. guarantee all parties who use their springs.

As to the Legal proceedings—an action has been commenced against one company for an alleged infringement of Goodyear's patent, but is being defended with every prospect of success. An action has also been commenced by Fuller & Co., against parties for an infringement of Fuller's patent, and *this will be done in every case of violation.*

In every case in which Fuller's spring has been applied, it has been pronounced superior to that made by Mr. Ray, and this fact induces Messrs. Crane & Ray to claim the right of using it. They attempt to lead the public from the real question at issue, by producing a Deposition as to Mr. Ray having *tried to make* a spring which Mr. Fuller *did make* and patent. If Mr. Ray did invent a spring in 1844, why did he not apply for a patent, and not wait until 1848, when his application was rejected!

Mr. Knevitt has never stated that the springs were put on by him, which are refered to in Mr. Hale's article, but he does state that those springs are made according to Mr. Fuller's specification, and consequently are an infringement upon it. The article of Mr. Hale in the Boston Advertiser, quoted by Messrs Crane & Ray, was followed immediately by a letter in the same paper, from Mr. Knevitt, setting forth the facts of the case.

The springs refered to were put on by Mr. Ray before Mr. Knevitt came to the United States; when he arrived he gave Mr. Ray notice not to proceed further in making or vending such springs; Mr. Ray then said he did not wish to infringe, and would not continue to do so, and he then contrived an India-rubber and Air spring which totally failed.

In the selection of their first agent, Fuller & Co. were particularly unfortunate, and their reason for adverting to it is simply that it may tend to throw light on subsequent transactions, and furnish a reply to the remark, "that this opposition was invited by their own delay in getting the thing to work." The individual refered to undertook the agency for Fuller's springs, and left Liverpool on the 1st January, 1847, furnished with a complete set of drawings, models, etc., and every necessary instruction to make arrangements respecting the supply of material, and to have it at work within the time limited by law; but *from that hour to the present, not a single communication has been received from the said agent.* Some of their models, however, they have traced into the hands of parties now seeking to invade their rights, and by whom they understand they have been exhibited as speeimens of their own invention.

The superiority of Fuller's spring is implied in the offer of the New England Car Co. to make springs upon his principle (now that a preference is given to the disc and plate form) and this notwithstanding the fact, that Fuller & Co. have a patent, and that Mr. Ray's application for one was rejected. The public can judge which company's course has been the most honorable, or whose statements are entitled to consideration.

Fuller's springs can be obtained of *Mr. Knevitt* the Agent, at 38 Broadway New York, and of *Messrs. James Lee & Co.*, 18 India Wharf, Boston.

May 26, 1849.

C. W, Bently & Co.,

PORTABLE Steam Engine and Boiler Manufacturers, East Falls Avenue, near Pratt St. Bridge, BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupyidg but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose, where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fillings for Steam, Water, Gas, etc., constantly on hand,

Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2D AND HAMILTON STS.,

SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country.

Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day.

Philadelphia, June 16, 1849. 1y25

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by JOHN W. LAWRENCE,
142 Front-street, New York.

☞ Orders for the above will be received and promptly attended to at this office. 32 1y.

Text Book of Mechanical Drawing,

FOR the use of SCHOOLS and SELF-INSTRUCTION, containing,

1st. A series of progressive practical problems in Geometry, with full explanations, couched in plain and simple terms; showing also the construction of the *parallel ruler, plane scales* and *protractor.*

2d. Examples for drawing *plans, sections* and *elevations* of Buildings and Machinery, the mode of drawing elevations from *circular* and *polygonal* plans, and the drawing of Roman and Grecian Mouldings.

3d. An introduction to *Isometrical drawing*, with 4 plates of examples.

4th. A treatise on *Linear Perspective*, with numerous examples and full explanations, rendering the study of the art easy and agreeable.

5th. Fxamples for the projection of shadows.

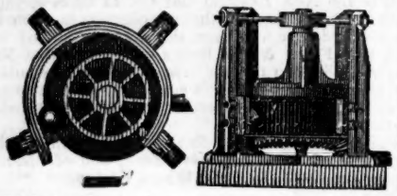
The whole illustrated with 50 STEEL PLATES.

Published by WM. MINIFIE & CO.,
114 Baltimore St., Baltimore, Md.

Price $3, to be had of all the principal booksellers.

MACHINERY.

Henry Burden's Patent Revolving Shingling Machine.



THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phœnixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has give universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammersman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll rounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y. P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery *for making Spikes*, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, *Agent*,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNdersigned are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNdersigned, the *Original Inventor* of the *Plate Wheel* with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country. A. T.

Kensington, Philadelphia Co.,
March 12, 1848.

ENGINE AND CAR WORKS.

DAVENPORT & BRIDGES,

HAVING ASSOCIATED WITH THEM

MR. LEWIS KIRK, OF READING, PA.,

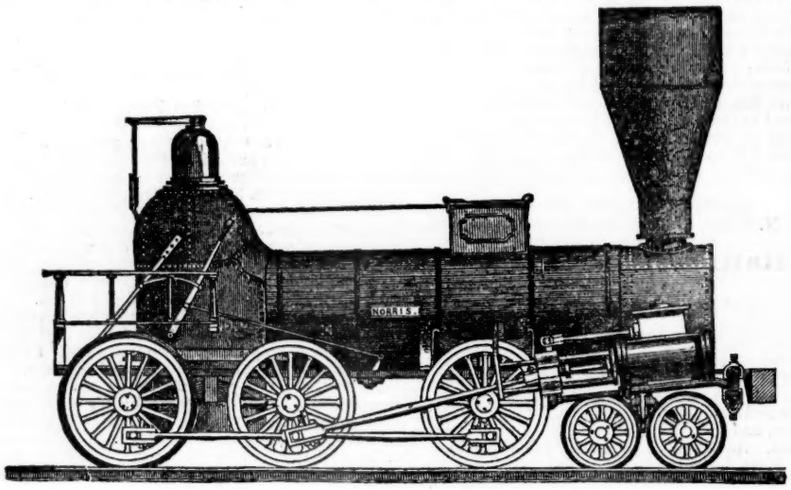
And recently enlarged their Establishment, (making it now the most extensive in the United States,) they are prepared to manufacture to order Locomotive Engines and Cars of every description. Stationary Engines, Steam Hammers, Boilers, and all kinds of Railroad Machinery. Also, Castings and Forge Irons of all kinds —including Chilled Wheels, Frogs, Chairs, Switches, Car Axles, and Locomotive Cranks, Connecting Rods, Steel Springs, Bolts, etc., etc. Orders from all parts of the country solicited for Engines and Cars, or any part or parts of the same. All orders will be furnished at short notice, and on as good terms as any manufactory in the country. Coaches pass our works every fifteen minutes during the day, from Brattle St., Boston.

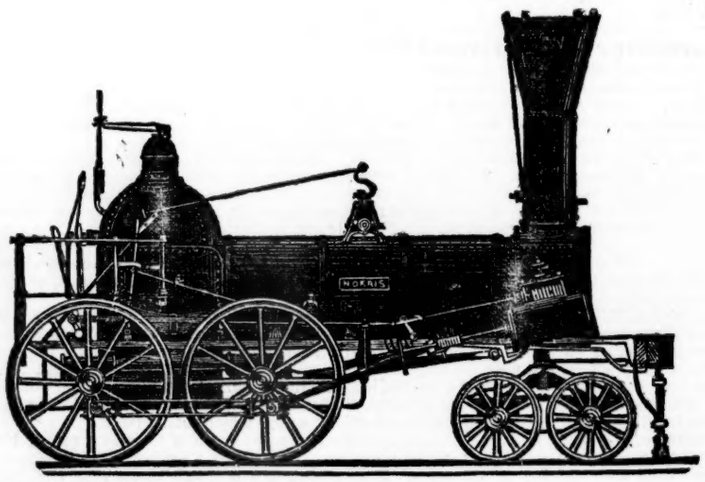
DAVENPORT, BRIDGES & KIRK.

Cambridgeport, Mass., February 16th, 1849.

NORRIS' LOCOMOTIVE WORKS.

BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,





THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size.

Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tires are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS.